Teachers' Beliefs and Practices about the Environment and Teaching about the Environment: The Case of Black City (Baku, Azerbaijan)

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Contents

Abstract

Teachers' beliefs about the environment and their classroom practices have significant implications for environmental and societal outcomes globally. While previous research has explored teachers' environmental beliefs, limited attention has been given to how these beliefs influence instructional practices, particularly in Azerbaijan. This study investigates the environmental beliefs of secondary school geography teachers in Azerbaijan and examines how these beliefs are enacted in their classroom practice. The research adopts the New Ecological Paradigm as a theoretical framework to formulate interview questions, given its relevance to anthropocentric and ecocentric worldviews. Data were collected over four months through semi-structured interviews and classroom observations in three schools located in Black City, one of the most polluted areas of Baku. Using purposeful sampling, five geography teachers were selected for the study. Observations followed interviews to assess the alignment between teachers' stated beliefs and their teaching practices. Thematic inductive analysis revealed that teachers predominantly held anthropocentric environmental beliefs, which appeared along a spectrum rather than as a binary construct. Additionally, the findings indicate that teachers primarily focused on knowledge transmission (the 'what' of environmental teaching) through indirect learning methods (the 'how'). The integration of behaviour-building and skill development was observed only occasionally. Alignment was observed between teachers' espoused and enacted beliefs about the environment. However, a disconnect emerged in their approach to teaching about the environment: while all teachers emphasised the importance of direct learning in interviews, their actual classroom practices varied. As the first study (to the best of my knowledge) exploring the intersection of teachers' environmental beliefs and instructional practices in Azerbaijan, this research provides valuable insights for future studies and practical advancements in teacher education and environmental education.

Acknowledgement

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I am also deeply thankful to my sister, who first inspired the dream of studying abroad within me. Her courage and vision have always been a guiding light for me. Being a pioneer in her decisions, her rebellious spirit and wisdom have served as a lantern on my path, inspiring me to dream bigger and to pursue those dreams relentlessly.

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To all of you, thank you. I could not have done this without you, and there is no way I could ever repay the strength, belief and love you have given me.

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List of Abbreviations

BI - background interview

CO - classroom observation

CoM - Cabinet of Ministers of the Republic of Azerbaijan

COP29 - 29th Conference of the Parties

DAE - Diagnostic Assessment Exams

DEO - District Education Offices

EE - Environmental Education

FI - final interview

FUI - follow-up interview

ESD - Education for Sustainable Development

ESDP - Education Sector Development Project

HEI - Higher Educational Institutions

MECCE - Monitoring and Evaluating Climate Communication and Education Project

MEV - Model of Ecological Values

MoES - The Ministry of Education and Science of the Republic of Azerbaijan

NCF - National Curriculum Framework

NEP - New Ecological Paradigm

OECD - Organisation for Economic Cooperation and Development

PISA - Programme for International Student Assessment

RED - Regional Educational Department

UNDP - United Nations Development Programme

UNECE - United Nations Economic Commission for Europe

UNESCO - United Nations Educational, Scientific and Cultural Organization

UNFCCC - United Nations Framework Convention on Climate Change

UNICEF - United Nations International Children's Emergency Fund

UNO - United Nations Organization

SDG - Sustainable Development Goals

SEC - State Examination Centre of the Republic of Azerbaijan

SSDE - State Strategy on Development of Education

SSPE - State Standards of Public Education in the Republic of Azerbaijan

STEAM (Science, Technology, Engineering, Arts, and Mathematics)

Chapter 1. Introduction

The 29th Conference of the Parties (COP29) to the United Nations Framework Convention on Climate Change (UNFCCC), hosted by Azerbaijan in November 2024 once more highlighted the scope of environmental degradation due to the negative human impact on climate and underscored the urgency of reducing greenhouse gas emissions, enhancing financial and technological support for vulnerable nations, and implementing ambitious climate policies to limit global warming to 1.5°C. Measuring climate literacy through the International Program for the Assessment of Students' Educational Achievement (PISA) was discussed during a high-level panel session on ‘Measuring Environmental Literacy within the Framework of International Assessment’ with the participation of the Ministry of Science and Education of the Republic of Azerbaijan (MoES) and the Organisation for Economic Cooperation and Development (OECD) and the agreement was signed between the MoES and OECD to assess students' climate literacy in the upcoming PISA study, scheduled for 2029 (Phoenix, 2024) which highlighted the critical role of education in addressing environmental problems.

The scope of the conference which brought together representatives from nearly 200 countries and over 55,000 participants was an indicator of the commitment of not just developed but also developing countries like Azerbaijan to address the pressing global challenge of climate change and accelerate the transition to clean energy. Since the late 1990s, there has been a significant rise in temperature in Azerbaijan, with trends continuing into the present day (Figure 1). Being a country heavily reliant on oil and gas production, the threat of oil-based pollution emerges as a significant factor contributing to climate change (UNDP, 2015). According to the World Bank's (2021) Azerbaijan Climate Risk Country Profile, temperatures in Azerbaijan are expected to rise faster than the global average. By the 2090s, average temperatures could increase by around 4.7°C compared to the 1986–2005 period under the highest emissions scenario. Both maximum and minimum temperatures are likely to increase at an even greater rate, which will increase risks to health, livelihoods, and ecosystems. The largest temperature increases are projected for the summer months (July to September), when average temperatures may rise by nearly 6°C. Such temperature rises could lead to lower agricultural productivity, worsen desertification and soil salinity, and increase irrigation needs, putting further pressure on Azerbaijan’s water resources, also posing serious risks, especially for poorer communities and vulnerable groups (World Bank, 2021).

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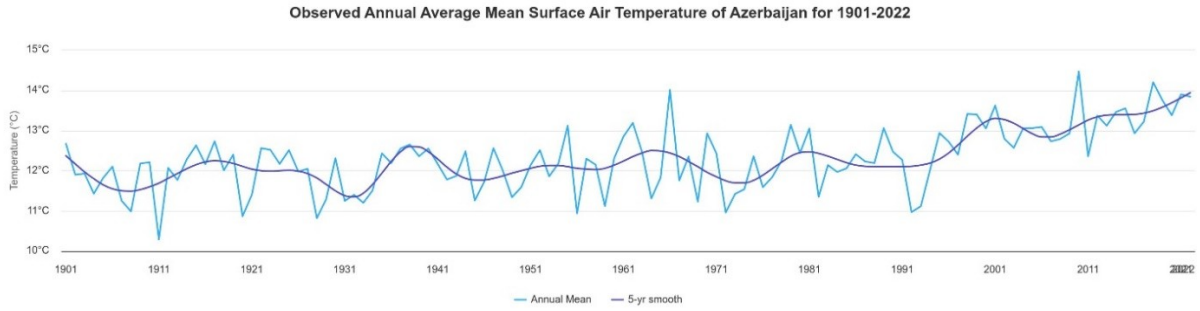

Figure 1. Air temperature change in Azerbaijan for 1901-2022 (World Bank, 2024)

In the context of Azerbaijan, particular environmental challenges are associated with the pollution of air, as well as pollution of the Caspian Sea and depletion of natural resources due to oil and gas production. Being part of the Soviet Union for more than 70 years led to the exploitation of the natural resources of Azerbaijan (Pomfret, 2011). The Caspian Sea, the world's largest enclosed body of water, is facing dramatic pollution due to massive oil production and industrial waste being major sources of environmental challenges (Bayramov et al., 2018). During World War II, more than 70% of the Soviet Union's total oil production which was crucial to the war effort, came from Baku's oilfields (USSR Energy Atlas, 1985). Given Azerbaijan's relatively small size of 86,000 square km and population of 10 million, this contribution was remarkably significant, underscoring Baku's critical role in sustaining the USSR's wartime energy supply. This extensive oil production also had a severe environmental impact, further exacerbating pollution in the region and contributing to Black City maintaining its status as a heavily polluted industrial area, with extremely poor air quality and severe environmental degradation.

Environmental problems of Azerbaijan are not limited to air pollution and the pollution of the Caspian Sea due to oil and gas extraction but expand to cover the Absheron lakes[1] (Figure 2) which was exposed to acute pollution despite the fact that these lakes play a significant role as the water resources of Azerbaijan (Aliyev & Khalilova, 2014).

[1] Absheron Lakes includes nearly 800 lakes covering more than 3325 ha


Tbilisi
თბილისი
Zaqatala
Quba
Sheki
Gebele
E119
Mingachevir
Ganja
Goychay
Masazirgol
Absheron peninsula
E60
Azerbaijan
Baku White City
Salyan
E119
Nakhchivan
Jelilabad
Jolfa
جلفا
Lankaran
Khoy
خوی
Marand
Ahar
Astara

Figure 2. Source: Google (2025). Map of Azerbaijan and Absheron Peninsula

The above-mentioned environmental challenges, in addition to issues like soil degradation, biodiversity loss, deforestation, and other issues, have become critical concerns for all nations, necessitating immediate and collective action on a global scale and have foregrounded the environmental dimension of sustainability (Ashmann & Franzen, 2015; N. Evans, 2020; Stickney & Skilbeck, 2020). Starting from the Belgrade Charter (1976) and the Tbilisi Declaration (1978), which are considered major events in promoting environmental education, the role of education in achieving sustainability has been widely recognised, often framed as Environmental Education (EE) and Education for Sustainable Development (ESD). Considering these terms overlap in many cases and are used interchangeably, in section 1.1. I clarify the similarities and differences between them and define how I refer to them throughout this thesis.

Considering both global aspects, such as the crucial role of teachers in the effective implementation of EE and more specific nuances, such as: 1. Teachers' beliefs influence their classroom practice (N. S. Evans et al., 2012; Fives & Buehl, 2012; Nation & Feldman, 2021; Skott, 2015); 2. Beliefs are the focus of change in teacher education programs (Korthagen, 2004; Richardson, 2003; Tillema, 2000); 3. Teachers' beliefs assist successful implementation of curriculum materials (Cotton, 2006a; Skott, 2015); 4. Teachers' beliefs are important in achieving teacher agency (Biesta et al., 2015) I explored secondary school teachers' beliefs about the environment and teaching about the environment and the compatibility between teachers' beliefs and practice.

1.1. Environmental Education and Education for Sustainable Development

This section clarifies the similarities and differences between the two terms (Environmental Education and Education for Sustainable Development) and how I use them throughout my research.

Defining Environmental Education (EE) and Education for Sustainable Development (ESD) is essential in this study to establish conceptual clarity and ensure that the discussion is framed within a consistent understanding of these terms. Academics disagree on whether ESD is an evolution of EE, a broader umbrella concept, or a competing framework. This debate leads to inconsistent use in literature and practice. Although EE and ESD are closely related and sometimes used interchangeably, their scopes and emphases differ: EE traditionally focuses on fostering environmental awareness, knowledge, and stewardship, while ESD integrates environmental, social, and economic dimensions to promote long-term sustainability which I

discuss broadly below. While ESD is seen as a progressive expansion of EE incorporating social and economic dimensions, the foundational concept of sustainable development is ambiguous and contested, leading to multiple and often contradictory interpretations (Stevenson, 2006). There are also other related terminologies beyond EE and ESD that appear in the academic literature, which I discuss in Section 2.4.1. EE Terminologies, p. 58.

The transition from Environmental Education to Education for Sustainable Development in the late 1990s brought a long-standing controversy related to EE or ESD (Pavlova, 2013). Pavlova (2013) argues that a lack of clarity between EE and ESD leads to 'confused policy formulation and implementation' (p. 657). The gap between discourse and practice has also been stressed by Sauvé (1998) as a major reason for the ineffectiveness of environmental education.

The overlap between the terms shaped the contested nature of EE and ESD, focusing on the questions: what are the differences between EE and ESD? Is there a need to use a new term like ESD instead of EE? What are the practical consequences of replacing the term EE with ESD? Is the shift affected only in terms of slogans or has ESD brought changes in practice as well (Campbell & Robottom, 2008)? I do not attempt to answer all these questions to resolve the debate as it may be out of the limits of my study, but the scope of these questions shows how far the discussion has gone and still has not reached a consensus.

Until the concept of 'Sustainable Development' emerged, EE seemed to be a major term in the field. However, after the Brundtland Commission in 1987, the term 'Sustainable Development' attracted world attention and became a new notion in the international and political arena that has influenced and been reflected in all fields, including education. The widely accepted structure of SD is regarded as balancing needs between environmental protection, social equity, and economic growth which are interrelated (Berglund & Gericke, 2016; Joumard, 2013; Olsson et al., 2016). The definition of ESD is rooted in the concept of SD, which translates this concept into education by promoting critical thinking, problem-solving, and action-oriented learning that empower individuals to make informed decisions for a more sustainable world (Firth & Smith, 2013).

Although defined differently, the major characteristic of EE is articulated as teaching and learning about the environment (Bolscho & Hauenschild, 2006; Guerra et al., 2023; Smyth, 1995) while ESD also includes teaching and learning about the environment, but it takes a holistic approach and places EE within a broader context that integrates social, economic, and ecological well-being (Barth, 2016; Firth & Smith, 2013; Sterling, 2000, 2013).

However, some papers from previous decades that capture the main components of EE (e.g. Intergovernmental Conference on Environmental Education, Final Report, 1977) also

stress the inclusion of social and economic dimensions. According to Stevenson (2006), it is more about to what extent these dimensions have been emphasised in those papers.

Based on the literature review, the major areas of discussion seem to be:

1. EE and ESD as slogans. Campbell & Robottom (2008) and Robottom (2012) use the umbrella term "environment-related educational work" for EE or ESD to fill in the gap in the language of the relevant area. Robottom (2012) questions whether it is a change in real practice or only reflected in the use of language, posing, "Can contemporary educational practice conducted under the ESD discourse be differentiated from practices conducted under the EE discourse?" (p. 157) or it is just a change in the wording entailing no significant shift in practice? In another article, together with his colleague, he states that "EE is being aggressively and extensively 're-badged' as ESD" reflecting a "symbolic" change only (Campbell & Robottom, 2008, pp. 195, 206).

2. Relationship between EE and ESD. According to Gough (2013), EE is an evolving term. The definition of it has been articulated differently in different papers, and by the emergence of SD, EE came to reflect features of ESD as well. Similarly, Bolscho & Hauenschild (2006) state that 'the development of environmental education was accompanied by controversies over terminology' (p. 10), and as the term evolved, it enriched its frame from protecting the environment to covering complex environment-society interaction. The study on exploring relationships between EE and ESD conducted by Hesselink et al. (2000) shows the range of views suggested by their participants (Figure 3).

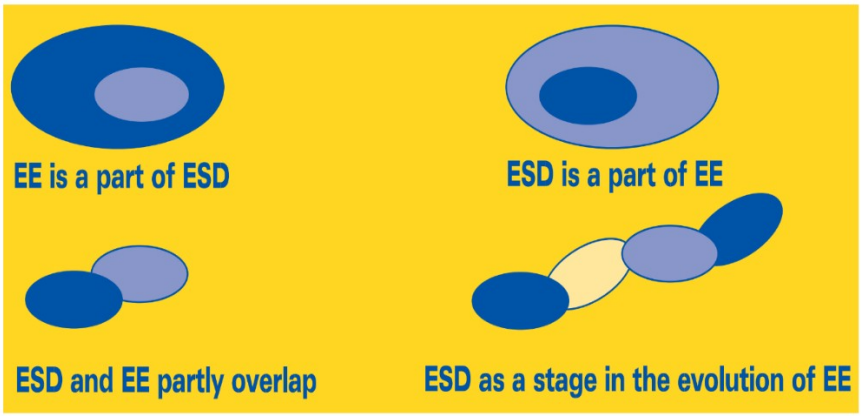

Figure 3. The relationship between EE and ESD (Hesselink et al., 2000)

According to the research results by Hesselink et al. (2000), the majority of participants perceived ESD as the next evolutionary step of EE. However, all four options indicate that EE and ESD are related, and the extent of this relationship opens the way for the debate.

3. EE refers to negative consequences, ESD indicates positive connotations. Another area of debate is that EE is about overcoming the consequences of past generations and has negative implications while ESD has positive roots and bears hope for the future**.**

Smyth's (1995) thoughts are interesting at this point who argues that EE has a negative connotation by focusing on environmental problems and seeing the environment as a problem. However, ESD has a positive orientation as it seeks sustainable development. This accords with Bolscho & Hauenschild (2006) view, who think that the essence of environmental education is limited by “nature protection education” whereas ESD nurtures “global responsibility for the environment” (p.15) that is reflected in sustainable development concepts.

4. Environmental ethics. EE and ESD have been discussed widely from the perspectives of environmental ethics (Bonnett, 1999, 2012; N. S. Evans et al., 2012; Kopnina, 2012, 2013; R. Stevenson, 2006). It has been contentious if one of these concepts is more ethical when compared with the other one (Syed-Abdullah, 2020) or, as Bonnett (2012) states, “what is to count as a ‘right’ relationship” (p. 87) with the environment. Moreover, it has been argued that (Kopnina, 2012) SD, which shapes the notion of ESD, expresses more anthropocentric beliefs focusing on human development, stating “Sustainable development is the development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (“World Commission on Environment and Development,” 1987, p. 16) while EE approached the environment as nature that needs to be protected rather than exploited for human development.

The increasing lack of consensus arising from conceptual ambiguity, evolving terminology, differing views on their relationship, ethical debates between anthropocentric and ecocentric perspectives, and contrasting perceptions of EE as problem-focused versus ESD as solution-oriented, raising questions about whether ESD represents genuine progress or merely a symbolic, suggest that the boundary between the terms is not clear cut and this affected teachers’ perception of EE and ESD. Research indicates that teachers’ conception of education for sustainability includes mainly education about ecological systems and environmental issues (Evans et al., 2012) or, to be more concise teachers’/student teachers’ conception of ESD has been limited by environmental perspective, leaving less space for economic and social dimensions (Birdsall, 2013; Borg et al., 2014; Campbell & Robottom, 2008; Summers et al., 2004; Sund & Gericke, 2020).

Table 1 shows that though both terms reflect preserving the environment and instilling human beings with beliefs, values and behaviours that are directed to preserve the environment, it seems the main focus of EE is the education process about the environment while ESD is much concerned about promoting sustainable development through education that includes teaching and learning about the environment as well.

Declaration/author	EE/ESD	Definition	Key words
Tbilisi Declaration (Intergovernmental Conference on Environmental Education, Final Report, **1977**)	EE	…to succeed in making and communities understand the complex nature of the natural and the built environments resulting from the interaction of their biological, physical, social, economic and cultural aspects, and acquire knowledge, values, attitudes and practical skills to participate in a responsible and effective way in anticipating and solving environmental problems, and management of the quality of the environment. (p.25)	Interaction, social, economic, cultural, knowledge, values, attitudes, skills
Sauvé (1998)	EE	…environmental education is an essential component, and not a mere accessory, of education. Indeed, it involves nothing less than the reconstruction of systems of relationships among persons, society and the environment. It is important to include environmental education in a comprehensive educational framework that is not reductive, that allows it to take its full place in order to work towards its own goals, and that integrates it in an optimal way with other dimensions of contemporary education. (Sauvé, 1998, p. 11)	Relationship, education, persons, society, environment, educational framework, integrate, reconstruction of systems
UNESCO (2009)	ESD	The vision of education for sustainable development is a world where everyone has the opportunity to benefit from quality education and learn the values, behaviour and lifestyles required for a sustainable future and for positive societal transformation… The founding value of ESD is respect: respect for others, respect in the present and for future generations, respect	Sustainable future, future generations, others, quality education, values, behaviour, transformation, respect

		for the planet and what it provides to us (resources, fauna and flora). (p. 1)	
Bonnett (2012)	EE	…environmental education, too, involves normative criteria, for example, for identifying (a) what count as the pressing environmental issues to be addressed, and (b) how one's relationship with the environment—and in particular with nature—is to be understood, and what is to count as a "right" relationship in this respect. (p. 87)	Identifying environmental issues, relationship, address, relationship with the environment
Firth & Smith (2013)	ESD	ESD is an evolving approach with the key characteristics of holism and interdisciplinarity, critical thinking, participatory decision making, applicability, local relevance, pluralism of pedagogies and fostering values that underpin sustainable development. (p. 171)	Sustainable development, holism, interdisciplinarity, critical thinking, participatory decision making, values
Barth (2016)	ESD	Education for sustainable development can best be described as a vision of education that seeks to balance human and economic well-being with cultural traditions and respect for the Earth's natural resources. It translates research outcomes of sustainability science into educational practices and guides the selection of learning objectives, relevant content and appropriate forms of teaching and learning. (p.326)	Sustainability, balance, human, economic well-being, cultural traditions traditions, respect, educational practices
Tikly (2020)	ESD	…socially and environmentally just education that facilitates the capabilities of existing and future generations and of natural systems to flourish... [in a way that] education and training policy can articulate with policy enacted across other domains as a whole so as to produce transformative sustainable development (p. 57-59)	Sustainable development, future generations, just education, existing and future generations, policy, articulate, policy enacted across other domains as a whole, transformative

Table 1. EE and ESD in different documents and articles

The summaries in Table 1 indicate that EE focuses more on learning and teaching about environmental problems and is more about the development of responsible individuals who understand the interrelationships between the environment and human beings while ESD is more about developing a holistic approach towards promoting a sustainable future that brings together environmental, economic and social pillars of SD. However, EE might still cover economic and social perspectives, just as ESD might consider human-environment relationships. As Stevenson (2006) suggested, that shifting from EE to ESD is more about a 'change of emphasis' rather than presenting a 'new substance' (p. 281).

Considering what I have mentioned above, I may conclude that EE is focused on the education process about the environment while the focus of ESD is an interdisciplinary approach to teaching and learning that brings together environmental, social and economic perspectives. Noting the emergence of ESD does not 'invalidate' EE but 'puts it in a broader context' (Sterling, 2000, p. 29) and considering that EE focuses on teaching and learning about the environment, and ESD takes a holistic approach to teaching by integrating environmental, social, and economic dimensions of sustainability, and also considering that I aim to explore what teachers' beliefs are about the environment and how they teach about it (not focusing whether they take a holistic approach to teaching about the environment), I primarily use the term EE in my thesis although I acknowledge economic prosperity and social responsibilities as vital parts of protecting the environment.

However, due to the significant overlap between EE and ESD, and the growing emphasis on ESD in recent literature, I may refer to ESD when referring to the scholarly articles that focus on environmental education. Additionally, since there is limited research on EE (or ESD) in Azerbaijan, I will also incorporate available resources related to teaching and learning about the environment in Azerbaijan, including those on ESD.

In the following section the country context, as well as educational reforms in the field of teacher education will be explored. Moreover, EE at general secondary schools and the place of EE within geography subjects will be discussed broadly.

1.2. Country context

The Republic of Azerbaijan is part of the South Caucasus region and is located at the boundary of Eastern Europe and Western Asia with a territory of 86,000 square kilometres and a population of ten million.

Azerbaijan ranks 20th in the world for proven oil reserves (Worldometers, 2016) and the country's economy is heavily dependent on oil production. Oil and natural gas shape nearly 60% of the government budget, 90% of the country's exports, and 30-50% of its GDP (International Energy Agency, 2021). Teachers in such an economy may view the environment primarily for its instrumental value, prioritising natural resources like oil and gas for economic stability over environmental concerns.

1.2.1. An overview of the Azerbaijan education system

The Ministry of Education of the Republic of Azerbaijan (MoE) is the central executive body responsible for the country's education system. The power of MoE (MoES after 2022) was increased by the presidential decree in 2020 by restoring its role in budget controlling that had been limited in the late 1990s by transferring it from MoE to the Ministry of Finance (Azərbaycan Respublikasi Nazirlər Kabineti, 2020). By another presidential decree in 2022, Azerbaijan National Science Academy and MoE were merged under one organisation, now becoming the MoES (Azərbaycan Respublikasında Elm və Təhsil Sahəsində Idarəetmənin Təkmilləşdirilməsi Ilə Bağlı Bəzi Tədbirlər Haqqında Azərbaycan Respublikası Prezidentinin Fərmanı, 2022). By gaining financial independence and expanding its roles and responsibilities, MoES has become more powerful. It is quite early to discuss its implications for teachers, but new reforms are underway related to schools and teachers, and we will see their results in the near future.

As of the information of 2020, there are 4429 public schools and 142486 public school teachers in Azerbaijan (Annual Report, MoE, 2020).

1.1.1.1. Structure of the education system

General education in Azerbaijan lasts for eleven years though the State Strategy on Development of Education that was approved in 2013 states the importance of the transition to the 12-year general education system and gradually, 12-year schooling is being incorporated into the education system. Starting from 2016, preschool education has been launched for 5-year-old children at public education schools, and by 2020, the program is planned to cover 90 per cent of children of that age (Secondary Voluntary National Review, 2019). General education is compulsory for primary and secondary levels. All three levels of education are provided free of charge in accordance with the Constitution of the Republic of Azerbaijan (1995) and the Law of the Republic of Azerbaijan about Education (2009). Students are supplied with textbooks free of charge. Although most of the general education schools in Azerbaijan are state-run, the growth of private schools has recently been observed, where students are entitled to pay tuition fees. Though these schools have to follow certain legislative rules, they are free to define their curriculum's context and recruit teachers that do not follow general regulations.

The language of instruction is mainly Azerbaijani in public schools. Some schools have classes where the language of instruction is both Azerbaijani and Russian. In Russian classes, all subjects are taught in Russian except the Azerbaijani Language. There are also a few schools where the language of instruction is only Russian (Table 2). The tradition of having Russian classes dates back to the period when Azerbaijan was part of the Soviet Union (Abizada & Seyidova, 2021; Luscombe & Kazdal, 2014). However, recently governments made crucial changes related to Russian classes and only children whose language is Russian at

home are allowed to attend Russian classes and representatives of MoES organise oral exams to test children's Russian language skills before offering them a place at Russian classes.

Language of Instruction	The number of schools	Percentage
only Azerbaijani	4086	91.96%
only Russian	16	0.36%
Both Azerbaijani and Russian	312	7.02%
only Georgian	6	0.14%
other languages (together with Azerbaijan language) (English, Turkish, French)	14	0.52

Table 2. Language of instruction in Azerbaijani schools (Ministry of Education and Science of the Republic of Azerbaijan, 2022)

The general school system is divided into four stages: primary education, secondary education, upper secondary education and higher education (Figure 4).

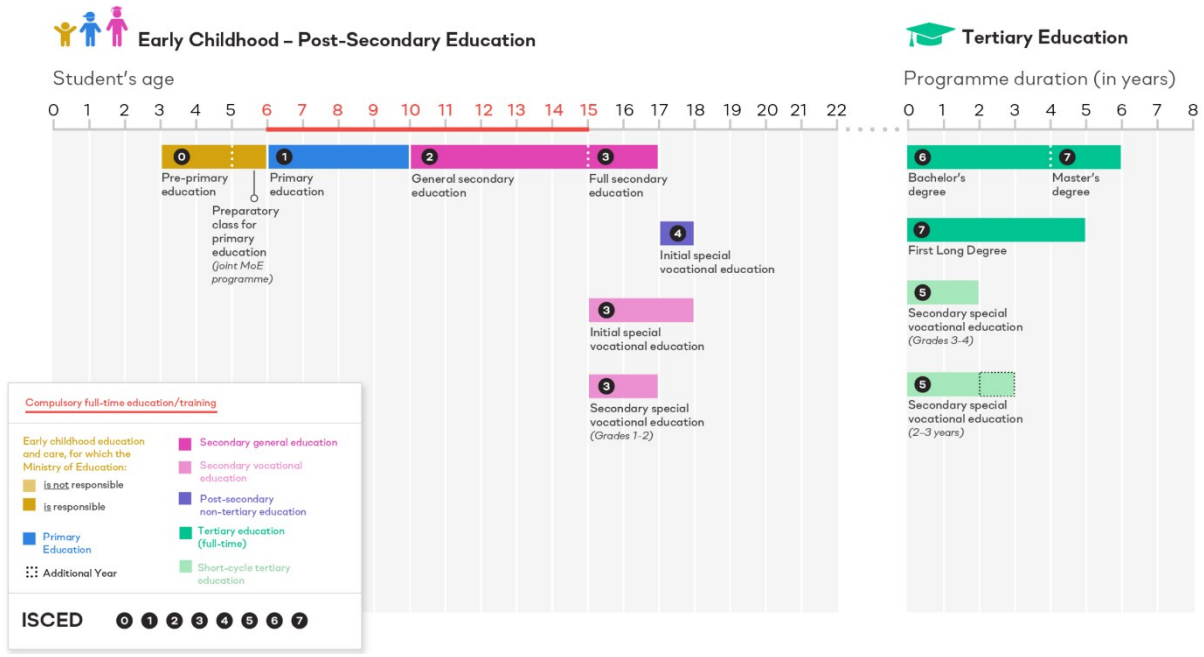

Figure 4. Education system in Azerbaijan (UNESCO, 2024)

Ninth graders take an exam organised by the State Examination Centre of the Republic of Azerbaijan (SEC) after which they can decide to apply for colleges (3.5 years), vocational education (2 years) or continue with upper secondary education (year 10 and 11) that can be followed by either colleges (2 years) or higher vocational education (3 years) or tertiary education where they receive bachelor degree (4 years). Recently a series of reforms were carried out in the field of vocational education that has been out of focus for many years. Many pilot projects were launched, one of the most important ones being opening new modern vocational educational schools and centres that allow students to get a sub-bachelor's diploma

enabling them to apply for higher education institutions without sitting in an exam after they graduate from certain vocational schools.

University admission exams are different from final school exams as the scores students get during both exams are calculated to have a place at higher educational institutions. Exams for admission to higher education institutions and vocational education and training are administered by the SEC. Applicants can choose up to eight universities or faculties according to their scores and they are admitted to one of the faculties they have chosen on a competitive basis by SEC. If students refuse to take up their place, they can take part in the second cycle of the admission process with the score they had from the first cycle. Very often, most places are filled up during the first admission cycle and only a few places are left. Recently, new models of universities have been established (such as ADA University) where courses are delivered in English, and applicants are required to take extra IELTS or TOEFL exams or take a one-year foundational course.

1.1.1.2. Education reforms

After gaining its independence in 1991 Azerbaijan faced many challenges. Loss of markets, hyperinflation, and widespread poverty showed that the country had a long way to achieving steady growth (Asian Development Bank, 2004; Donabedian & Carey, 2011). Education during the early years of independence was affected by the declining economy and the number of dropouts increased considerably, working being one of the major reasons (Asian Development Bank, 2004). Economic instability and the Nagorno Karabakh[1] conflict postponed educational reforms in Azerbaijan foregrounding the military and economic development of the country (Mammadov & Abaslı, 2019).

Starting from the early 2000s Azerbaijan has entered a period of reforms in the field of education and a series of reforms have been implemented since then with the support of international agencies.

The most important reforms were implemented in collaboration with the World Bank – 'Education Sector Development Project' (ESDP) between 2003 and 2014 in two phases: 2003-2007 and 2008-2014 that entailed crucial improvements in the field of education including teacher education, curriculum and textbook development, training of teachers, student assessment and the implementation of a new financing system (Abdul-Hamid et al., 2017). Within ESDP, 2006 curriculum reforms were one of the major turning points in the history of the education of Azerbaijan. Until 2006, the ultimate goal of education was to ensure students know the textbook's content by the end of the academic year. State standards were adopted

[1] Nagorno Karabakh is a territorial conflict between Azerbaijan and Armenia over internationally recognised territories of Azerbaijan. During the first Karabagh War (1988-1994), 20% of the territories of Azerbaijan was occupied, and 1 million Azerbaijanis were expelled from the Nagorno Karabagh region. Five resolutions of UNO about the immediate withdrawal of Armenian troops from Azerbaijani territories remained unfulfilled for several decades. Though the conflict has not been resolved entirely, Azerbaijan liberated its territories in 2020 during the large-scale war between the two countries.

and the skills and knowledge students had to gain at the end of each year were clearly established for each subject. Moreover, new national curricula for all subjects, as well as for geography are characterised by not only providing students with knowledge but also shifting from teacher-centred to student-centred learning and focusing on improving students' critical thinking, and problem-solving abilities where students are encouraged to focus on real-life issues.

The State Strategy on Development of Education (SSDE) in the Republic of Azerbaija (2013) marks an important milestone in the development of the education system. It outlines five strategic directions:

1. Establishing a person-oriented and competence-based approach through the development of curricula content for all stages of education.
2. Developing human resources by enhancing state policy to boost the prestige of the teaching profession and creating a new system to stimulate teachers' professional development.
3. Establishing a transparent management system within education.
4. Improving education infrastructure.
5. Creating a sustainable financing model for the education system.

Furthermore, the Action Plan for Implementing the Strategy (2015) includes several initiatives to support these goals, such as:

- Teacher training programs
- Establishing teacher grants
- Organising contests
- Conducting diagnostic assessments and teacher certification
- Increasing teacher salaries
- Applying a practical model in teacher pre-service training

These measures serve to realise the main objectives of the Strategy and to build a modern, equitable, and high-quality education system.

Diagnostic assessment of teachers. In a way of implementing the Strategy, between 2015 and 2017, diagnostic assessments of teachers were conducted to assess teachers' strengths/weaknesses, as well as professional skills to determine further courses of action and training according to the needs of teachers. As a result, the weekly teaching load was increased from 12 academic hours to 18 hours, and the salaries of teachers who took diagnostic assessments doubled (Dövlət Ümumi Təhsil Müəssisələrində Çalışan Bilik və Bacarıqlarının Diaqnostik Qiymətləndirilməsi Aparılan Müəllimlərin Dərs Yükünün və

Əməkhaqqının Artırılması Haqqında Azərbaycan Respublikası Prezidentinin Sərəncamı, 2015) and teachers who had higher scores during the diagnostic assessment had a chance to have more teaching hours compared to those who scored lower.

Teacher certification. In 2018, changes were made to the Law about Education of the Republic of Azerbaijan that reflected several important items, one of them being teacher certification, which is the procedure of assessing teachers' professionalism and professional suitability at general educational institutions. In accordance with the 2018 changes, in 2020, rules were adopted for teacher certification procedures and starting from January 2021, all teachers, once every five years, are expected to take a successful certification exam organised by MoES.

The certification process consists of two stages: a test and an interview. The certification questions are prepared in relation to the educator's position, job duties, profession (specialisation), and the subject they teach.

In the test stage of the certification, educators are given 60 questions related to:

- the general education programs of the subject they teach,
- teaching methodology (innovations in subject teaching methodology, principles of organising the pedagogical process, lesson planning, requirements for organising instruction, methods of assessing knowledge and skills, types and purposes of assessment),
- and teaching strategies (modern teaching methods and techniques, active-interactive teaching technologies, stages of an interactive lesson and requirements for each, the essence and content of the curriculum, and features of innovative pedagogical activity).

The test stage is conducted electronically on a computer, and the educator's results are announced immediately after the test is completed. Educators who score at least 30 points in the test stage are admitted to the interview stage.

For the interview to be conducted, the Ministry establishes an interview commission based on the recommendations of the Certification Council. In the interview stage, each educator is allocated 20 minutes, and the interview is graded with a maximum of 40 points on the following criteria: ability to present the topic according to the program; ability to assess learners; self-presentation skills; ability to organise the pedagogical process and communication skills. Educators who score at least 20 points in the interview stage are considered to have passed that stage.

Teachers who successfully take certification three times are granted teaching permission until they retire. Teachers who do not take the certification exam for a good reason are given a chance to take the next year's certification exam. However, if teachers fail to sit the exam for the second time, in accordance with the Labour Code, an employment contract with non-certified educators is terminated by the employer at the end of the academic year in which the certification is conducted (Dövlət Ümumi Təhsil Müəssisələrində (Ümumi Təhsil Üzrə

Təhsilverənlərə Münasibətdə Digər Dövlət Təhsil Müəssisələrində) İşləyən Təhsilverənlərin Sertifikatlaşdırma Qaydası, 2020).

In light of these reforms, there has been an increase in focus on environmental education within general education recently in Azerbaijan, although it may not encompass the full scope of the issue. The Law of the Republic of Azerbaijan on Environmental Education and Enlightenment of the Population (*The Law of the Republic of Azerbaijan on Environmental Education and Enlightenment of the Population*, 2002) serves as a cornerstone for the integration of environmental education into the general education level and requires environmental education as a compulsory component of general education. Moreover, the National Curriculum Framework (NCF) (CoM, 2010) sets out state standards for general education and emphasises global environmental issues as well as the complex relationship between humans and the environment across various subjects, although, empirical evidence suggests that Azerbaijan NCF had no reference to climate change (CC) indicating it has yet to fully embrace the imperative of climate change education within its core curricula (MECCE, 2023). Moreover, the findings from the Monitoring and Evaluating Climate Communication and Education Project (MECCE, 2023) underscore Azerbaijan's inadequate performance across all 14 climate-related metrics covering primary and secondary education, higher education, training, public awareness, public access to information, public participation and government CC activities compared to the region average (Figure 5).

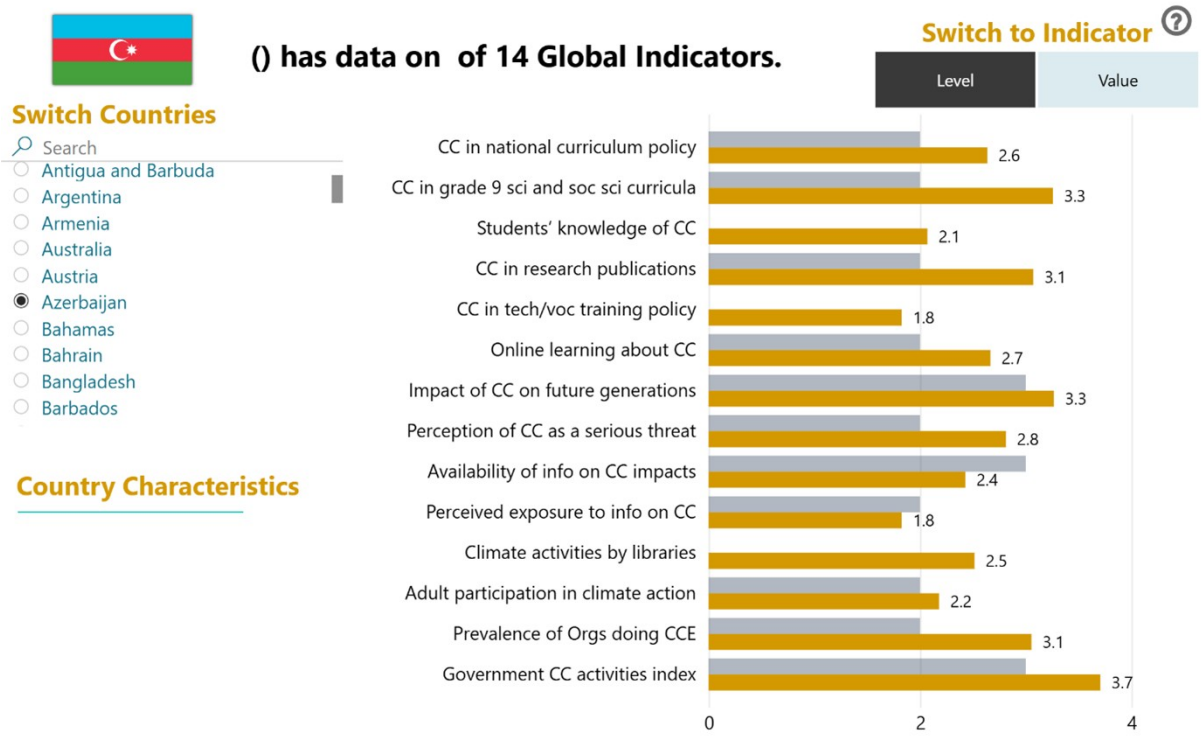

Figure 5. Azerbaijan's performance across CC indicators (MECCE, 2023)

There remains a notable lack of data regarding students' knowledge of CC, the integration of CC-related content in technical and vocational education, and the role of libraries in supporting climate-related education and outreach while Azerbaijan stands out in the region for outperforming the average on specific indicators, particularly in terms of perceived exposure to

information about climate change and the reported availability of information on its impacts. The underperformance on most indicators aligns with a broader trend observed in climate education within post-Soviet countries within the project which is indicative of the challenges stemming from a transitional phase following the dissolution of the Soviet Union, where the transition from Soviet educational paradigms to new ideological frameworks resulted in what can be described as a 'loss of purpose' in education (Silova et al., 2007, p. 161).

1.2.2. Teachers at general education schools

For a long time, teaching has not been considered a ‘prestigious’ job primarily because of the low salary, and students who could not make their way into more ‘glamorous’ faculties, had to choose teaching as their future career (Mammadov & Abaslı, 2019). Insufficient salary to support family requirements and cultural norms where a male representative is responsible for providing an income for the family led a lot of male graduates not to consider teaching as their future job (Mammadov & Abaslı, 2019; UNICEF, 2000). As a result, the proportion of male teachers in state schools is very low and the share of women teaching at general educational institutions is 80 per cent (Secondary Voluntary National Review, 2019).

Due to an insufficient number of schools double-shift schooling is common in Azerbaijan. Most schools work in two shifts – morning and afternoon shifts where the afternoon shift replaces the morning shift in the same class. Accordingly, teachers are usually required to teach on more than one shift. Teaching hours of teachers are regulated by the Document approved by the Cabinet of Ministers of the Republic of Azerbaijan (CoM, 2010) and teachers may have 1 or 2 ‘stavka’[1] teaching hours (1 stavka equals 18 academic hours). School principals are responsible for lesson distribution by considering certain legislative rules and the results of diagnostic assessment and teacher certification.

1.1.2.1. Teacher Education in Azerbaijan

The Department of Higher Educational Institutions within MoSE and the recently established Higher Education Agency regulate higher educational institutions (HEI) and currently, there are 39 state-owned and 12 private HEIs (Ibadoghlu, 2021). Faculties are divided into 5 categories based on certain disciplines. University admission exams are conducted separately for the different groups.

Group number	Speciality	Subjects that are assessed	University
Speciality group 1	Teacher of physics, computer science, math (in Azerbaijani and English), technology	chemistry, maths, physics, foreign language, the Azerbaijani	Baku State University, Azerbaijan State Pedagogical University, Baku Engineering

[1] Stavka is a Russian word which is widely used in Azerbaijan to refer to weekly workload of teachers

		language	University, Khazar University, etc.
Speciality group 2	Teacher of geography	The Azerbaijani language, geography, maths, foreign language, history	Baku State University, Azerbaijan State Pedagogical University, Nakhchivan State University, Ganja State University, Sumgayit State University, Khazar University, Baku Women's University.
Speciality group 3	Teacher of history, Azerbaijani language, literature, primary school teacher, teacher of foreign languages (English, German, French, Russian)	Azerbaijani language, foreign language, maths, literature, history	Baku State University, Azerbaijan State Pedagogical University, Azerbaijan University of Languages, Baku Slavic University, Lankaran State University, Khazar University, etc.
Speciality group 4	Teacher of biology, chemistry	chemistry, physics, math, Azerbaijani language, foreign language, biology	Baku State University, Azerbaijan State Pedagogical University, Baku Engineering University, Nakhchivan State University, Nakhchivan teachers' University, etc.
Speciality group 5[1]	Teacher of physical education and military training, music, arts	Azerbaijani language math foreign language	Baku Music Academy, Azerbaijan National Conservatory, Azerbaijan State Culture and Art University, Azerbaijan State Academy of Physical Education and Sport, etc.

Table 3. Speciality groups, relevant faculties and universities (Abituriyent 4, 2021)

Through four years of undergraduate study, teacher preparation is carried out in 15 public and private universities of Azerbaijan for the core subjects. Graduates get a diploma, after which they can become teachers at the general schools of Azerbaijan. The number of universities that are in charge of preparing geography teachers is seven (Table 3).

Besides HEI, teacher preparation is realised in some colleges as well. Until the 2014/2015 academic year, colleges were in charge of preparing teachers from different speciality groups. In 2014/2015 several teaching specialities were removed from colleges' admission plans (Abituriyent 3, 2014; Abituriyent 5, 2014). Currently, teacher preparation in colleges includes only certain specialities – teachers of physical education (PE), technology, arts and music (Abituriyent 3, 2021; Abituriyent 5, 2021). The workload of teachers graduating

[1] Applicants are expected to take aptitude exam for this speciality group

from HEI or colleges is the same and the main indicator in allocating workload is the results of the teacher recruitment exams. However, the graduates of HEI receive additional payments made to their monthly salary.

1.1.2.2. Teacher qualification

In Azerbaijan, the criteria for recognition of qualifications of teachers are based on the State Standards on General Education[1] in the Republic of Azerbaijan (Cabinet of Ministers of the Republic of Azerbaijan, 2010). The state standards of public education in Azerbaijan outline the overall structure, content, and quality expectations of the general education system, curriculum, management, infrastructure, teacher qualifications, and the knowledge, skills, and competencies students are expected to develop at various educational levels. Of particular relevance is Item 6, which defines quality indicators for educators, specifically, Article 6.3 emphasises the professional and pedagogical competencies required of teaching staff within the system. According to Article 6.3 of SSPE, to qualify as a teacher, candidates must meet several requirements. The first two requirements are subject-specific knowledge (content knowledge) and the ability to communicate and work with students (pedagogical content knowledge). Content knowledge and pedagogical content knowledge that have been advanced by Lee Shulman during his presidential address at the 1985 annual meeting of the American Educational Research Association (Shulman, 1986) are considered important teacher qualifications in Azerbaijan as well. Similarly, Fenstermarcher (1994) distinguishes between teachers' formal and practical knowledge. Despite the various ways it is presented, there is significant research to support subject-specific knowledge and pedagogical content knowledge as essential factors to contribute to the quality of education.

In Azerbaijan, content knowledge is acquired mainly at universities and colleges (only for certain specialities – teachers of PE, technology, music and Arts). At these educational institutions, students also learn the essentials of methodology and pedagogy that bring together content and pedagogical knowledge. According to Fenstermarcher (1994) teachers' formal knowledge is referred to as knowledge based on scientific research, while practical knowledge is generated based on teachers' experience. Shulman (1986) presents three forms of teacher knowledge: 1) propositional – stored in the forms of propositions, 2) case – based on a detailed description and 3) strategic – which requires teachers to behave according to a particular situation. Fenstermarcher (1994) states that propositional and case knowledge complies with the blend of formal and practical knowledge, whereas strategic knowledge is compatible with practical knowledge. Considering pedagogical content knowledge comes with experience, the essentials of methodology and pedagogy can be referred to as theoretical-pedagogical content knowledge that complies with what Shulman (1986) calls case knowledge.

[1] In Azerbaijan, general education includes preschool education, primary education, lower secondary education, and upper secondary education

According to the Teacher Recruitment and Relocation Rules (2016) in Azerbaijan, the minimum requirement to become a teacher is a diploma in pedagogical specialities from either a college where the duration of the studies is three years or a university – bachelor's degree that pre-service students get after four years of studies at the universities.

Besides the content knowledge and practical content knowledge, to qualify as a teacher, the following criteria have to be met:

- Follow ethical manners;
- Have cooperative and management skills;
- Have the skills to present their performance and explore the latest pedagogical approaches;
- Be fair, responsible and accountable;
- Be respected by the school and community to they belong;
- Have the willingness to take part in innovative projects and programmes.

The first two criteria are assessed during the first part (written exam) of teacher recruitment exams, while others are evaluated during the interview phase of the exam (second part), which I will deal with in the following subsection.

1.1.2.3. Teacher recruitment

Until 2010, teachers had limited chances to find a job, as after graduating from the university pre-service teachers were offered to teach at the specific districts where very often they had to refuse related to mainly family responsibilities or distance. In most cases, schools were responsible for hiring teaching staff. Since 2010, teacher recruitment rules have significantly changed and become centralised. As a result, the teacher recruitment process became transparent and graduates with teacher diplomas had to sit another exam to be able to teach at general education schools which gave them a chance to be part of a competitive recruitment program and have the flexibility to choose the school they want to teach (Müəllimlərin Işə Qəbulu və Yerdəyişməsi Qaydaları, 2016).

The teacher recruitment procedure is conducted at four stages for primary and secondary school level: submission of application, taking a written exam, choosing vacant places, and interview. After submitting the online application, teachers take an exam where they are presented 40 questions on content knowledge and 20 questions for pedagogical knowledge, overall 60 questions. At the end of the exam, teachers can immediately see the results of their performance on the screen. Starting from 2022, candidates are presented with the questions that they have answered wrong and given 10 minutes to look through their answers. It made the process more transparent and decreased the number of teachers considerably who launched an appeal. Candidates for the capital schools have to score at least 80 per cent due to higher competitiveness while for regions this figure is 60 per cent. The results of the exam are valid for two years which establishes opportunities for teachers to apply for a teaching place for two consecutive years. Candidates who successfully pass the exam can choose up to

8 vacancies after which they have an interview with the representatives of MoES. Candidates successfully rated by MoES can start their jobs at their respective schools.

Vacancies that are not filled up after exams are suggested to teachers who have taken the exam but have not applied for certain positions. Results of the centralised exam and regions are taken into consideration and teachers from the same region with the highest score are contacted first. This process is repeated several times during the year. According to the recent changes, teacher candidates who are successful and refuse to take up the vacancies they have applied for are not allowed to take part in in-year recruitment procedure.

According to the recent changes to the Law about Education (2021), teachers who are recruited for the first time through teacher recruitment exams are not expected to be certified during the first five years of their employment.

MoES collects information from DEOs about vacancies once a year - at the beginning of May every year to recruit teachers for the coming academic year in September. As a result, 'unexpected vacancies' may emerge between September and May when a small number of teachers are temporarily recruited by the District Education Offices (DEO).

According to the most recent Presidential Decree on the 20th of December 2021, District Education Offices were abolished and Regional Education Departments (RED) were established that brought together several regions and were responsible for recruiting teachers for emerging vacancies. Recruitment for emerging vacancies is regulated according to the directive of the director of the State Agency for Pre-school and General Education, following the principle of sequential order: 1. Teachers who have the highest scores on the list will be offered the job first; 2. If all teachers on the list have been recruited and no candidates remain, teachers from the nearby schools will be offered the job; 3. If no candidates are available, retired teachers aged 65 or older may be offered the position; 4. If no teachers are available, individuals teaching subjects closely related to the vacancy will be considered for the position.

'Unexpected vacancies' are occupied on a temporary contract as all teachers are expected to take the centralised exam.

Teacher reallocation. Teacher reallocation is organised once a year before teacher recruitment to allow in-service teachers to change their jobs to other schools. Teachers who took part in diagnostic assessment or teacher recruitment exams are eligible to apply for relocation and they are not expected to take any exam. Either teachers' diagnostic assessments or teacher recruitment exam results from previous years are taken into consideration while teachers are relocated.

1.2.3. Environmental Education in Azerbaijan

EE was introduced into the Azerbaijan National Curriculum in the early 2000s. Its formal implementation was guided by the Law of the Republic of Azerbaijan on Environmental Education and Enlightenment of the Population (*The Law of the Republic of Azerbaijan on Environmental Education and Enlightenment of the Population*, 2002). It has not been

established as a separate subject, but EE was integrated into various disciplines, including geography, chemistry, physics, biology, and life skills, requiring an interdisciplinary approach. With the emergence of concepts like SD and ESD, the term ESD has become more commonly used than EE to reflect a broader approach to teaching and learning about environmental issues.

In 2005, Azerbaijan joined the UNECE Strategy for ESD which put responsibility on Azerbaijan to promote sustainable development through education. Although a national strategy on ESD, as recommended by the UNECE Strategy on ESD (Strategy for Education for Sustainable Development, 2005), has not been adopted yet, some improvements have been made in this field. Mainly, in recent years, environmental issues have been introduced into curricula in secondary schools in Azerbaijan. The national curriculum standards for primary, lower, and upper secondary education reflect 106 of the 169 targets outlined under the 17 Sustainable Development Goals (SDGs) are integrated across various subjects, including life skills, biology, geography, world history, the history of Azerbaijan, chemistry, mathematics, and others (Report on the implementation of the UNECE Strategy for Education for Sustainable Development (2017–2019), 2018). The 169 targets represent specific, measurable objectives designed to guide countries toward achieving the broader goals of sustainable development by 2030, addressing a wide range of issues, including poverty reduction, quality education, gender equality, climate action, and responsible consumption and production (UN, 2015). Azerbaijan joined the World's Largest Lesson global initiative by UNICEF in September 2015 and lesson plans and instructions for teachers have been translated which cover topics like environmental pollution, global ecological problems, ecological balance, sustainable living, etc. (Lesson Plans on Sustainable Development Goals, 2017).

Establishing Eco Clubs in secondary schools was one of the major steps in promoting environmental education in Azerbaijan. Within the framework of the environmental awareness program “Green Network” and Eco Clubs (Ministry of Science and Education of the Republic of Azerbaijan, 2016) were established between 2015 and 2021 to increase environmental awareness and knowledge among teachers and students and build skills and competencies to develop pro-environmental behaviour and responsibility. Starting from 2016, the Ecological Forum of Eco Club members has been held every year.

Environmental Education within geography. 6-11 graders have 2 academic hours of geography subject a week while no geography classes are taught at the primary level (MoES, 2021). However, the life skills subject covers a range of topics including geography at the primary level.

Content strands and standards. To ensure the achievement of general learning outcomes in the subject of geography, three content strands have been identified: 1) geographical location - which aims to shape students’ understanding of location on a local, regional and global scale; 2) nature - to help students understand nature as a whole and comprehend its natural regularities and 3) society – to nurture tolerance in students by familiarising them with

racial, national, religious and ethnic diversity and the role of social factors in economic development. These strands are consistent across both general secondary (grades 5–9) and upper secondary (grades 10–11) education levels, while the learning outcomes differ for each level. Based on these content strands, major and sub-standards are defined for each grade level to guide instruction and assessment. Environment and environmental problems are covered within the third context – society, where the environment-human relationship is emphasised through the analysis of population distribution, the impact of natural and social factors on the economy, and the critical evaluation of human activities in maintaining ecological balance (Table 4). (Azərbaycan Respublikasının Ümumtəhsil Məktəbləri Üçün Coğrafiya Fənni Üzrə Təhsil Proqramı, 2013).

Geographical location

Students can:

- compare and contrast celestial bodies, substantiate interactions among them, and explain their role in our life;
- observe and make calculations in the area they live, present cartographic descriptions of the place and develop skills in using these descriptions;
- determine the physical, economic and geopolitical position of the territory based on cartographic descriptions.

Nature

Students can:

- analyse characteristic features of geological layers, the causes of natural events and processes that occur in them, explain the role of it on human life;
- define the diversity in location of natural resources and analyse opportunities of using them
- make use of relevant devices and tools to observe natural events and processes and present results.

Society

Students can:

- analyse characteristic features of world population, explain the causes of uneven distribution of the population by regions;
- explain the connection between natural, social factors and the development of the economy in the world, share their thoughts of the effective use of nature and natural resources;
- critically analyse the role of human activities on the environment and understand the importance of preserving ecological balance.

Table 4. Learning outcomes across content strands at the general secondary level (grades 5-9) (Azərbaycan Respublikasının Ümumtəhsil Məktəbləri Üçün Coğrafiya Fənni Üzrə Təhsil Proqramı, 2013).

According to the geography curriculum, textbooks cover a range of topics related to the environment and environmental topics in different years, more often topics within the same chapter (Table 5). The life skills subject also covers a range of topics related to the environment but often within different topics that are interrelated.

Year	Sub-standard	Topics in the textbooks
6	3.2.5. Makes the photo album of environmentally polluted areas	Debate topic. Aral - the sea that has become a desert Adaptation of human to the environment Debate topic. Amazon rainforest
7	3.2.5. Making the list of ecologically polluted areas that have been used by humans	Economies and the environment Practical lesson. Ecological court
8	3.2.5. Explains the effect of environmental problems on human life	The environment and its protection The sources of environmental pollution Economy and the environment Ways of protecting the environment The environment and human health Ecological situation in Azerbaijan and tourism-recreational resources Exercise. Environmental problems and the ways of reducing them
9	3.2.5.Conducts environmental impact assessment	Environmental policy Environmental monitoring
10	3.2.5. Evaluates the role of anthropocentric factors in global environmental problems	Global Ecological Problems Environmental Issues in Azerbaijan
11	3.2.5. Evaluates the role of ecological balance in the socioeconomic development of society	Climate and human health. Global warming in Azerbaijan. Class experiment. Greenhouse effect.

Table 5. Sub-standards and topics in the geography textbooks related to EE (Azərbaycan Respublikasının Ümumtəhsil Məktəbləri Üçün Coğrafiya Fənni Üzrə Təhsil Proqramı, 2013; Coğrafiya 10, 2017; Coğrafiya 11, 2018; Coğrafiya 6, 2021; Coğrafiya 7, 2018; Coğrafiya 8, 2019; Coğrafiya 9, 2020)

Geography textbooks. In Azerbaijan, textbooks are a primary medium for delivering the curriculum. According to the 'Rules for the Preparation of Textbooks, Teaching Aids, and Other Educational-Methodological Tools for General Education Institutions,' textbooks provide structured content, guide the teaching process, and ensure consistency between curricula and what is taught across different classes and schools (Cabinet of Ministers of the Republic of Azerbaijan, 2020). As can be observed from Table 5, EE is reflected in curricula and in the content of all textbooks and EE covers about two topics each year (only in 8th grade, the number of topics is six).

Environmental topics are confined to a few sessions, usually positioned as the final topics. For example, in the 7th grade, environmental subjects are covered in the last two topics: Topic 53 (Economy and the Environment) and Topic 54 (Ecological Court) (Coğrafiya 7, 2018). In the 8th grade, six topics of the final 10th section (Environment and Its Protection) are

dedicated to environmental issues (Coğrafiya 8, 2019). Similarly, in the 9th grade, only Topics 33 (Ecological Policy) and 34 (Ecological Monitoring) out of 56 total topics address the environmental issues (Coğrafiya 9, 2020). In the 6th grade, only three topics are about the environment: Topic 10 (Big Problems of Big Cities), Topic 34 (Aral - The Lake That Has Turned Into a Desert), and Topic 40 (Amazon Forests) (Coğrafiya 6, 2021).

Anthropocentric perspectives in the geography textbooks. Based on my analysis of geography textbooks, I observed two key directions related to environmental topics: a) a general discussion of the environmental problem and the human role in exacerbating them; b) the impact of environmental problems on humanity. In all cases, the importance of human life and the instrumental value of the environment were major themes. For instance, the Year 6 geography textbook introduces **a** debate activity regarding Amazon forests, encouraging students to choose and support their positions with arguments from diverse perspectives (Figure 6).

Figure 6. Geography textbook, year 6, p. 133. Debate lesson: Amazon Forests

Though the activity seems suitable for exploring different environmental beliefs, both positions are ultimately framed to serve humanity, humans being at the centre of both images, providing human-centred prompts for discussion - we need to cut down trees because it will help humans to live better (on the left) or we should not cut down trees because we have lived here for centuries (on the right). Though this lesson is part of the 'Nature and Humans' section, it covered topics such as living beings, forests, deserts, and soil with no reference to what is nature, what is our place in it, how can we know nature, what should be our attitude towards it, etc. The questions for reflection in the textbook reflected an anthropocentric worldview as well: Why do people plant trees? What role do plants play in people's lives? (Coğrafiya 6, 2021, p. 121).

The sentence in the year 8 Geography textbook - 'Protecting the environment is not only important for maintaining ecological balance and passing it on to future generations' seemed to present a perspective to support the ecocentric approach. However, it followed as 'Natural geographical conditions, mineral springs, and the health-promoting climate conditions

of coastal and mountainous areas are used to restore people's health and treat diseases' (Coğrafiya 8, 2019, p. 175) which was the other way of framing the anthropocentric approach.

1.2.4. Conclusion

As this context suggests, a lot has been done in the field of education, including teachers, curriculum and school management systems that have seen reasonable development compared to the beginning of the 2000s. The major reform since the beginning of 2010 was the Education Strategy (2013) which formed the basis for the reforms in the field of teacher preparation and development. These reforms have covered all areas of education, including the reduction of colleges' role in teacher preparation, reforms in teacher recruitment and replacement, the implementation of teachers' diagnostic assessments, and the introduction of teacher certification. All these reforms in teacher preparation and development are expected to influence the overall quality of education in Azerbaijan in the near future.

I now examine the teachers' role in implementing environmental education considering the schools, especially teachers are the major actors to instil students with environmental responsibility.

1.3. The importance of teachers' beliefs about the environment

Teaching about the environment places high demands on teachers, as it often requires them to go beyond the boundaries of traditional instructional approaches. Educators are expected to adopt more holistic, student-centred, and action-oriented teaching methods that challenge conventional classroom practices. For example, the new education systems are expected to align with the goals of sustainable development which reflect both individual and societal transformation (Framework for the Implementation of ESD beyond 2019, 2019) with a major shift from traditional teaching to self-directed, collaborative, problem-based (Barth, 2010) and critical learning (Spahiu et al., 2014). This aligns with constructivist teaching methods that invite learners to construct their own knowledge, "develop, express and justify their own views about sustainability issues" (Corney & Reid, 2007, p. 36).

Redesigning the education system to shift from traditional to transformational teaching requires changes on behalf of teachers to be committed to embracing new roles and adapting their practices (Timm & Barth, 2020). Considering teachers' practices and beliefs are interconnected and teachers' practices are shaped based on their underlying beliefs, identifying teachers' beliefs is the first and crucial step in teacher development (Lambert & Bleicher, 2013). Moreover, teachers' beliefs about the environment shape children's understanding of environmental concepts, particularly in elementary and secondary schools, where educators directly teach science and nature-related knowledge (Lwo et al., 2017). To this end, teachers' knowledge and beliefs are critical factors in addressing ESD (Corney & Reid, 2007) and it is within this domain that I locate exploring teachers' beliefs about the environment in my study since "beliefs, in large part, are thought of as the focus of change in

the teacher education program" (Richardson, 2003, p. 4). This emphasis reflects the understanding that meaningful and lasting changes in teaching practice often stem from shifts in teachers' underlying beliefs, which shape how they interpret and implement new approaches. Furthermore, "widespread and meaningful change requires … individual teaching choices made by well-informed pre and in-service teachers" (Evans et al., 2012, p. 10).

The role of education in attaining sustainable development is indisputable (Global Action Programme on ESD, 2014) and as the main actors, teachers are expected to be highly qualified to keep pace with the changing demands of environmental education. To be the change agents, it is also important teachers are aware of their own beliefs and consider if there is a need for modifying their beliefs.

2. Literature Review

2.1. Teachers' beliefs

> *To understand teaching from teachers' perspectives we have to understand the beliefs with which they define their work. (Nespor, 1987, p. 323)*

In this chapter, I provide a critical analysis of teachers' beliefs and in general, focus on their beliefs about the environment and examine the relationship between beliefs and practices by reviewing relevant literature, discussing topics related to my research, and exploring areas of controversy. The key areas that are reviewed are a) the conceptualisation of teachers' beliefs, b) beliefs about the environment and c) the relationship between teachers' beliefs and practice. By looking at these broad fields I have located my own research within the domain of teachers' environmental beliefs and classroom practice. I first begin my literature review by focusing on the conceptualisation of beliefs (2.1.1) by looking at different definitions provided by researchers from distinct areas, the researchers' views on beliefs and attitudes including cognitive, conative, and affective aspects (2.1.2). I then discuss the complexities of differentiating beliefs from knowledge or knowledge from beliefs, highlighting major areas of discussion which are: a) beliefs are subjective – based on individual claims while knowledge is objective – accepted by the larger community; b) beliefs hold an affective connotation while knowledge does not; c) beliefs are stable while knowledge is dynamic (2.1.3). In section 2.2, I move to explore beliefs about the environment, distil out major characteristics of anthropocentric and ecocentric approaches and deal with how the anthropocentric way of thinking is part of humans' conceptualisation of their relationship with the environment and the role cultures play in shaping these beliefs. In 2.3. I elaborate on teachers' beliefs about the environment, then justify the importance of exploring teachers' beliefs (2.3.1). Finally, in section 2.4. I discuss the relationship between beliefs and practice, and highlight factors that influence the belief-practice relationship. Subsection 2.4 summarises the main points of the chapter.

2.1.1. The conceptualisation of teachers' beliefs

The conceptualisation of beliefs (Abelson, 1959; Fishbein, 1967), as well as teachers' beliefs (Fenstermarcher, 1994; Nespor, 1987; Pajares, 1992; Richardson, 1996; Skott, 2015), have been widely researched for several decades. Complexities are mostly related to defining the term "belief" (e.g. Pajares, 1992; Richardson, 1996), determining conceptual boundaries between beliefs and knowledge (Fenstermarcher, 1994; e.g. Pajares, 1992; Richardson, 1996; Skott, 2015), as well as between beliefs and attitudes (Fishbein, 1967; Kollmuss & Agyeman, 2002; S. Liu et al., 2015), identifying to what extent beliefs consist of affective, cognitive or conative components (e.g. Abelson, 1959; Fishbein, 1967), the changing/stable nature of

beliefs (e.g. Pajares, 1992; Skott, 2015) and congruence of beliefs with practice (Fives & Buehl, 2012).

Despite the different definitions in the literature, the majority of authors seem to put "subjective judgment" as a core element of beliefs (Fives & Buehl, 2012; Pajares, 1992; Richardson, 1996; Skott, 2015). Pajares (1992) defines beliefs as "an individual's judgment of the truth or falsity of a proposition that can only be inferred from a collective understanding of what human beings say, intend, and do" (p. 316). Borg (2001) views beliefs as "a proposition which may be consciously or unconsciously held, is evaluative in that it is accepted as true by the individual, and therefore is imbued with emotive commitment; further, it serves as a guide to thought and behaviour" (p. 186). It is interesting to note that Parajes' and Borg's characterisation of beliefs are similar and rely mostly on the true or false state of certain notions that is gained through evaluation.

However, Fishbein (1967) states that evaluating the concept is different from believing/not believing in the existence of the same concept. According to the psychologist, beliefs are based on subjective judgments, that refer to the probability dimension - it may be true or not true. However, attitudes are based on the evaluative dimension but not beliefs. Fishbein separates the affective and evaluative components from beliefs, stating that attitudes are defined within the boundaries of affect and evaluation, while beliefs have only cognitive and conative aspects. Rejecting the multidimensional character of an attitude, Fishbein states that attitudes and beliefs are unidimensional concepts and proposes two kinds of unidimensional scales that include a series of bipolar scales: attitude is represented by evaluative dimension (e.g., good-bad) and belief is represented by probability dimension (e.g., likely-unlikely).

He suggests that there are two types of beliefs: "beliefs in" and "beliefs about". While the first type refers to the existence of a certain phenomenon, the latter refers to the nature or quality of the existing concept. For example, teachers may believe in the existence of ozone depletion that may be referred to as belief in, teachers may also hold different beliefs regarding the causes of ozone depletion being the greenhouse effect (Michail et al., 2006) or car exhausts (Summers et al., 2000) that can be referred to as beliefs about. Similarly, Borg (2001) differentiates between espoused beliefs that are reflected in words and beliefs in action that are reflected in the realisation of the belief.

Rokeach (1968) takes a different approach adding another disputable component to an already complex issue. According to Rokeach (1968) a belief system consists of attitudes and values. While a value consists of a single belief, "an attitude is an organisation of several beliefs focussed on a specific object (physical or social, concrete or abstract) or situation, predisposing one to respond in some preferential manner" (Rokeach, 1968, p 16). In a different way, Pajares (1992) states that it is beliefs that are nested within attitudes, and beliefs are interrelated within that attitude. These beliefs are also connected to beliefs of other attitudes, and these connections between beliefs are called values that later lead to a certain action. So,

Rokeach's conclusion is that attitudes and values are part of the belief system while Pajares state that attitudes are the greater notion that is formed by beliefs.

By drawing conceptual boundaries between belief and attitude, Fishbein (1967) stated that:

> Attitudes are learned predispositions to respond to an object or class of objects in a favorable or unfavorable way. Beliefs, on the other hand, are hypotheses concerning the nature of these objects and the types of actions that should be taken with respect to them. (p. 257)

The author goes on to argue that, two people can have the same beliefs but different attitudes or the same attitudes and different beliefs towards a certain concept which is closely related to the meaning that concept discloses for different people. For example, two people may believe that girls' math skills are equal to boys'. While one may have a positive attitude toward boys' math skills and may positively associate girls' math skills with boys', another individual may have a negative attitude toward boys' math skills and may negatively associate girls' math skills with boys'. Related to the meaning different people attach to the concepts attitudes may vary while beliefs may be the same. Or as Stern (2000) noted in his example of organic foods, people may hold the belief that the prices of organic food are high, however, depending on contextual factors that affect attitude, for some people high prices may be a barrier to buying organic food that shapes a negative attitude while for others it may be a sign of quality that shapes a positive attitude.

Amid the ongoing discussion, shared characteristics seem to be reflected in one way or another in the investigations: 1) researchers unanimously reflect on belief as being an individual judgment that is supported by "self-serving motives" (Ajzen, 1991) but not by "a truth condition" (Richardson, 1996); 2) exploring attitude-belief relations, researchers bring up three main aspects of the mind – affective, cognitive and conative, referring to them as the components of belief or attitude.

Another controversial issue related to the topic is considered to be the belief and knowledge relationship that I am going to look at in the next subsection.

2.1.2. Beliefs and knowledge

In this section, I will explore two key themes that emerge from the literature review regarding the relationship between belief and knowledge: 1. their interrelatedness, which sometimes leads to their interchangeable use, and 2. the differences between the two concepts related to a) truth condition - how belief is often associated with subjective truth, while knowledge is usually linked to objective truth, b) emotional colouration and c) stability. Finally, I will refine and define the concepts of belief and knowledge, providing a framework that will guide my study.

The debate around the difficulty of identifying where knowledge ends and belief begins (Pajares, 1992) can be considered the origin of their interrelatedness since Fenstermarcher

(1994) states that “objectively reasonable belief is an acceptable form of knowledge within the context of educational practice” (p. 24). As Pajares (1992) suggested, there is no precise boundary between knowledge and belief; instead, these two notions are intertwined, and beliefs serve as a basis for understanding a new phenomenon. This may be the reason why they are used interchangeably in some articles (e.g. Liu et al., 2015).

Though belief and knowledge are regarded as closely related, both of them have distinctive features in a way to contribute to human understanding of the environment and some researchers (Antognazza, 2020; Williamson, 2000) claim that they are fundamentally two different phenomena with distinctive characteristic features. This view is supported by a number of studies that indicate an individual can hold knowledge without beliefs or beliefs without knowledge (Fives & Buehl, 2012) or two people can have the same knowledge but different beliefs about the same phenomenon (Begum, 2012).

First, beliefs are defined as “psychologically-held understandings” (Richardson, 1996, p. 106), “inferred from what a person says or does, capable of being preceded by the phrase ‘I believe that…’ (Rokeach, 1970, p. 113) and “accepted as true by the individual holding the belief” (Richardson, 2003, p. 3) while knowledge is “the most truth-entailing” state of mind (Williamson, 2000, p. 6) that requires “epistemic standing” and “backup claim” (Richardson, 2003, p. 3).

Three key aspects emerge while analysing literature to differentiate belief from knowledge: the relatedness of two phenomena with: a) truth, b) emotional background and c) stability

First is the relatedness of belief and knowledge with the “truth” condition. The nature of connections between belief-truth and knowledge-truth have been approached differently:

1. Belief holds truth condition while knowledge does not have - Investigating characteristics of teachers’ beliefs, Nespor (1987) suggests existential presumption as one of the distinguishing features of beliefs from the knowledge that refers to the truth that an individual holds. This implies that teachers hold various assumptions - beliefs about the existence or non-existence of certain entities that they consider true and that later guide them to make a judgment about certain behaviours or learning outcomes of students.
2. Knowledge has a truth condition while belief does not have - A similar argument to the first one is presented by Richardson (1996) but in this case for defining knowledge who states that knowledge possesses an “epistemic stand” and is supported by evidence while belief is free of a “truth condition”.
3. Both belief and knowledge hold truth conditions but the nature of truth is different - As Skott (2015) states, knowledge is different from beliefs in terms of its relation to objective truth while beliefs hold connotations with subjective truth. Gettier (1963) emphasises belief as an inseparable part of knowledge by formulating that an individual

can be sure that a certain phenomenon is true if only he/she believes that it is true and can be justified in believing what is said where justified true belief becomes knowledge

The third approach seems to cover the previous two but the authors of the first two approaches do not differentiate between subjective and objective truth as the first approach may be taken equal to subjective truth while the second approach aligns with the objective truth. It may be concluded that both belief and knowledge may hold truth condition but it is different in terms of being subjective or objective.

According to Antognazza (2020) belief is different from knowledge and belief can be "true and strongly justified", yet belief and knowledge are two different states of mind. We should neither seek the ways of converting belief to knowledge by labelling belief as "justified true belief" (Gettier, 1963) or "objectively reasonable belief" (Fenstermarcher, 1994) nor should think of knowledge as part of belief:

> "... justified true belief is not sufficient for knowledge - not because something else should be added to true justified beliefs, but because knowledge is something fundamentally different from belief… specific contribution of belief to our cognition is that of aiming at truth where and when knowledge is out of our cognitive reach (either for objective or for subjective reasons). In this framework, therefore, belief aims at truth, not at knowledge." (Antognazza, 2020, p. 4,5)

Beliefs are not always about knowing something based on scientific evidence but aiming for truth grounded in personal judgements despite those limitations. Noting truth possesses a 'relative' disposition as for the person who holds the belief, their beliefs can be true while for others it may seem not to be true. Truth condition does not qualify belief as knowledge while both – belief and knowledge may hold a truth component either being subjective or objective.

The second feature that distinguishes belief and knowledge is the affective and evaluative aspect of belief that is more related to senses and personal evaluation (Nespor, 1987). Unlike knowledge, beliefs have an emotional background – colouration. Similarly, Gill & Hardin (2015) state that, 'emotions shape beliefs and are shaped by beliefs.' Drawing on an example of history teachers' beliefs about the content of the course, Nespor suggests that, based on the affective component of their beliefs, teachers' feelings of what should be taught lead them to evaluate why it should or should not be taught. Related to this, Nespor brings another characteristic feature of belief that states beliefs are very often stored based in random personal memories, while knowledge is a more semantically established system. Nespor also suggests alternativity as a distinctive feature of belief which refers to the idea that, different from the one they have experienced as a student to avoid the negative "emotions" of the past, individuals create alternative beliefs that are imaginary as every belief holds either positive, negative or neutral connotations (Abelson, 1959; Fishbein, 1967; Skott, 2015).

Differences between beliefs and knowledge in terms of their quality of being stable or temporary can be considered another key distinction between two concepts that have been highlighted by researchers (Fives & Buehl, 2012; Pajares, 1992; Richardson, 1996; Skott, 2015). Beliefs are more stable than knowledge and altering beliefs is very difficult. Nespor

(1987) posits that beliefs are static since “when beliefs change, it is more likely to be a matter of a conversion or gestalt shift than the result of argumentation or a marshalling of evidence” (p. 321) while knowledge is dynamic as it may change when supported by sound arguments. According to Richardson (2003), a shift in beliefs might be possible by encouraging teachers to acknowledge their own beliefs and by engaging them in observing their own beliefs within a classroom and it requires a considerable amount of time. Studies focusing on stated beliefs indicate fundamental changes may happen in teachers’ beliefs (Wall, 2016), even as a result of short teacher education programs (Y. Liu et al., 2019), however, self-reflection of beliefs may not always result in changes in teachers' enacted beliefs as it is rather a ‘slow’ and ‘fragile’ process marked with ‘progressions and regressions’ (Lebak, 2015, p. 711). Besides, changeability may depend on the type of belief; the more central belief is, the more resistant it is to change (Rokeach, 1970).

In conclusion, the literature suggests that belief may or may not hold truth related to its condition of being subjective (that is relative) (Skott, 2015), belief is more personal (Fives & Buehl, 2012; Levin, 2015; Richardson, 2003) and reflects the inner state (Gettier, 1963; Richardson, 1996; Skott, 2015) that may need no evidence (Richardson, 1996), is more stable (Nespor, 1987), has an emotional background (Gill & Hardin, 2015; Nespor, 1987) and reflects memories, feelings and experiences without any regular pattern (Nespor, 1987), while knowledge holds the truth condition that is objective (Skott, 2015), accepted by a larger community (Fives & Buehl, 2012) that requires “warranted propositions” (Richardson, 2003), is organised systematically (Nespor, 1987) and open to change (Nespor, 1987). So, we may decide to believe or not to believe in the existence of a certain phenomenon as it depends on our personal choice that is based on our memories or experience, however, to know something exists we must have knowledge that can be supported by evidence (Antognazza, 2020; Fenstermarcher, 1994).

Noting what I have discussed in this subsection, I employ a working definition for my research defining *belief as a mental state that a person considers true and reflects an individual’s inner world to interpret the realities/nonrealities of the world that can stem from personal judgment with or without reference to knowledge that can be either subjective or objective*. In this context, I define *knowledge as a set of phenomena grounded in scientific evidence, often characterised by objectivity and free from emotional influence*. Within my research project, I investigate beliefs, as well as teachers’ espoused beliefs (stated beliefs) and observed beliefs (beliefs in action) about the environment and about teaching environmental issues and congruence between espoused and observed beliefs.

In the next part of the literature review, I will explore teachers’ beliefs about the environment, the theoretical background of relating beliefs to classroom instructions, how teachers’ beliefs are related to their classroom behaviour, and what the differing views around the topic are.

2.2. Beliefs about the Environment

Before reviewing the literature about teachers' beliefs about the environment, I would like to note that there is extensive literature associated with the individual's approach towards the environment. Alongside defining these approaches as anthropocentric and ecocentric belief structures (Bechtel et al., 2006), one may come across many terms that depict these terms differently including values (Stern, 2000; e.g. Wiseman & Bogner, 2003), perception (e.g. Maurice, 2006), views, worldviews (Lwo et al., 2017), conception (e.g. Loughland et al., 2002), attitudes (Thompson & Barton, 1994) or sometimes two or three terms are used interchangeably within a single study. As Pajares (1992) summarises:

> They travel in disguise and often under alias - attitudes, values, judgements, axioms, opinions, ideology, perceptions, conceptions, conceptual systems, preconceptions, dispositions, implicit theories, explicit theories, personal theories, internal mental processes, action strategies, rules of practice, practical principles, perspectives, repertories of understanding, and social strategy, to name but a few that can be found in the literature. (p. 309)

Within this study, I will use the terms anthropocentric and ecocentric beliefs to reflect an individual's environmental perspectives that are rooted in their subjective views which I will discuss in the next sub-section.

2.2.1. No view from nobody: framing the environment through a human perspective

Environmental protection is often framed as a tension between anthropocentrism, which views nature as a resource to serve human needs with humanity managing the nature-human relationship, and ecocentrism, which emphasises the intrinsic value of nature, advocating for its preservation while recognising humans as an integral part of, rather than superior to, all living and non-living entities (Bonnett, 2018; Hart & Hart, 2019; Mylius, 2018; Thompson & Barton, 1994; Wiseman & Bogner, 2003). This section draws on Mylius' classification of anthropocentrism to argue that, as human beings, we cannot entirely escape perceiving the environment through a human-centred lens. Anthropocentric thinking is a natural aspect of human perception, provided it remains moderate. When weak, it serves as a constructive and inherent way of understanding our relationship with the environment. However, when strong - placing humans as inherently superior to all living and non-living beings, it extends beyond a natural perspective and can become destructive.

The concept of anthropocentrism, widely used in environmental education and ethics and often bearing a negative connotation, has been a subject of significant debate due to its overfocus on humanity and its superiority while ignoring the outer world (e.g. Bonnett, 2018; Duoblienė et al., 2023; Gough, 2021; Hart & Hart, 2019; Sutoris, 2022). However, anthropocentrism is not always seen from a negative perspective and superiority is not considered the exclusive form of anthropocentrism. On the contrary, it has been considered false (e.g. Hamilton, 2017; Mylius, 2018). Anthropocentrism is considered a human way of understanding the environment and we can not escape an anthropocentric perception of the

world since we are humans and human beings hold anthropocentric beliefs due to our nature of being humans (Mylius, 2018).

The concept of anthropocentrism has evolved significantly over time, reflecting changing perspectives on humanity's role in relation to the environment. A recent shift is characterised by the idea of reconceptualising anthropocentrism, focusing not just on 'polishing' our destructive relationship with the environment but facilitating a fundamental change. Discussing the necessity of shifting perspectives, Hamilton (2017) compares between old and new forms of anthropocentrism. The old anthropocentrism view asserts that the environment offers unlimited resources solely for human use while the new anthropocentrism holds that the environment will only yield its resources if humans take responsibility for its care. Rather than suggesting that humans have unrestricted freedom to exploit a passive Earth, the new anthropocentrism posits that on a dynamic planet, humans must limit their actions. Mies & Shiva (2014) present anthropocentrism as a choice between being destructive or creative. A fundamental paradigm shift – the ecological shift is essential to learn to live within ecological limits and without compromising the rights of other living and non-living beings by transforming into a creative and constructive Anthropocene (Mies & Shiva, 2014).

Mylius (2018) argues that human superiority is not the only representation of anthropocentrism but it is more human understanding of the world. By proposing three different types of anthropocentrism - perceptual anthropocentrism, descriptive anthropocentrism, and normative anthropocentrism, he goes beyond existing conceptualisations of anthropocentrism and delineates each type with its characteristic features. A similar classification has been offered by Hamilton (2017): ‘normative’ anthropocentrism - which focuses on who has moral standing – and ‘teleological’ anthropocentrism, which provides accounts of humankind’s special place on Earth. Discussing both strong anthropocentrism – focusing on humanity and weak anthropocentrism – considering the interests of non-humans, Huckle (2006) argues that weak anthropocentrism ‘should be at the heart of sustainability as a frame of mind’ (p. 20).

Characterising perceptual anthropocentrism as a way humans perceive the world, the author presents 'perceptual x-centrism' as a structure of perception that can vary depending on who or what is perceiving. Referring Thomas Nagel’s book ‘The View from Nowhere’ (1986) which explores the philosophical underpinnings of looking at the world and living in it through subjective and objective views, he asserts that if there is no view from nowhere, then there is no ‘view from nobody’ which means if all perspectives are inherently situated and subjective, then there can be no completely neutral or objective standpoint free of a personal or contextual viewpoint and ‘human beings perceive the world and cannot help but perceive the world as humans’ (p. 166-168). Descriptive anthropocentrism is the enabling part that helps humans describe the world through the lenses of humanity which is not necessarily positive or negative but can be ‘contingently negative’ (p. 170) because if I am restricted to phenomena that focus solely on humans, my capacity to interact with the world beyond humanity is significantly

limited. Normative anthropocentrism is the constraining part that presents certain norms for the existence of humanity (Table 6).

Perceptual anthropocentrism	Directly or indirectly informed by data received or gathered by the senses of the human body
Descriptive anthropocentrism by:	**Omission** - excerpts or bracket Homo sapiens or some element of (human) society from its context
	Funelling - 'funnels' or filter the given, or even the existent, through human perception
	Extrapolation - purports to study phenomena in the world in general based on a version of a concept developed via the study of human beings in particular
	Anchoring - human beings are literally the center
	of the (physical or geographical) universe or the end product of evolution in time
	Separation - assert that some capacity or feature that makes humans distinctive also somehow makes them metaphysically 'separate' from the rest of everything that exists
Normative Anthropocentrism	**Passive** - somehow privileges Homo sapiens or the category of 'the human' (generally because the paradigm at issue is descriptively anthropocentric
	Active – a) contain assertions or assumptions about the superiority of Homo sapiens, its capacities, the primacy of its values, its position in the universe, etc.; and/or b) attempt to make ethical or legal prescriptions (shoulds/ oughts) based on these assertions or assumptions.

Table 6. Types of Anthropocentrism by Mylius (2018)

Referring to what Mylius suggest, we may state that:

- All cases involving humans exhibit perceptual anthropocentrism;
- All types of anthropocentrism are descriptive (although different types) because humans rely on some type of data when thinking anthropocentrically;
- Descriptive anthropocentrism inherently begins as passive normative anthropocentrism because, when thinking anthropocentrically, humans either passively privilege themselves as they perceive the world through their anthropocentric lens or actively advocate for the superiority of humanity.

Therefore, it can be concluded that it is likely that people will hold anthropocentric beliefs which are perceptual, descriptive (though in different forms), and also passive normative anthropocentrism unless there is evidence to the contrary and this is our 'human-way' understanding of the environment in its weak form which is not necessarily destructive but on the contrary can be constructive.

In the next section, I will examine ecocentrism, which is a major opposing worldview to anthropocentrism.

2.2.2. Ecocentrism

Despite arguments by proponents of the anthropocentric worldview that it is inherent to human nature, anthropocentrism is often critiqued for its human-centred bias, and its philosophical foundation has been questioned (Gupta, 2024b). The contrasting worldview to anthropocentrism is ecocentrism, which does not argue against addressing environmental challenges to preserve the quality of life, but is defined as a worldview that places intrinsic value on nature itself, proposing that the natural world has its own spiritual value and should be preserved regardless of economic values (Thompson & Barton, 1994). In this section, I explore literature on ecocentrism and alternative terms that reflect ecocentric values. I also examine ideologies rooted in the fundamental principles of ecocentrism and the significance of legal change in transforming environmental values.

Alongside ecocentrism, alternative terms are used to express opposing worldviews to anthropocentric, including biocentrism, which is an ethical perspective that argues for the intrinsic value of all living beings and ecosystems, asserting that each species has an equal right to exist (Fincham, 2018; Sterba, 1994, 2011) and zoocentrism that considers animals as having moral standing (Hanlon & Ana, 2014). Within the environmental education context, besides ecocentrism and biocentrism, differing terms are used to reflect ecocentric approaches, such as non-anthropocentrism (Quinn et al., 2016), multispecies justice education (M. H. Saari, 2025), naturalistic dimension of EE (Sauvé, 2005) or naturalistic representation of the environment (Farias et al., 2018). Moreover, as a scale within environmental beliefs measurement, terms such as preservation (Wiseman & Bogner, 2003), biospheric (Stern, 2000) and egalitarian (Maurice, 2006) has been used to reflect an ecocentric worldview opposing anthropocentric values. All these non-anthopocentric concepts are based on the principles of a) rejection of species superiority - no living species, including humans, can be justifiably considered superior to any other; b) recognition of species-specific uniqueness - every species has unique traits, while humans possess traits like rationality and moral agency, other species also have distinctive traits; c) denial of human-centric valuation - the claim that human traits are more valuable than nonhuman traits is based on a human-centered perspective and lacks an objective justification; d) equal validity of species' perspectives - just as humans value their own traits and would not prefer those of another species, the same applies to nonhuman species; e) critique of anthropocentric bias - challenging the assumption that human values and perspectives are the default or most important, emphasising instead a more ecocentric or biocentric approach to valuing life (Sterba, 1994).

A broad range of ideologies and frameworks are based on the principles of ecocentric values. Corbett (2006) lists them as a) ethics and value-driven ideologies such as animal rights ideology and land-based ethics, which recognise the rights of nonhuman entities but place

humans at the top hierarchy and b) transformative ideologies such as ecological sensibility, deep ecology, social ecology, ecofeminism, native american ideologies and eastern traditions which contradict the fundamental principles that resources are intended to serve humanity and challenge the established hierarchical order of living entities.

One of the most influential of these ideologies is deep ecology which reflects the core principles of ecocentrism. The term ‘deep ecology’ is used by Naess (1972) who differentiates between shallow ecology, where the focus is ‘health and affluence of people in the developed countries’ (p. 94) and deep ecology founded on seven principles – 1) intrinsic relations, 2) biospherical egalitarianism, 3) diversity and symbiosis (valuing coexistence and mutual support over competition and domination), 4) anti-class posture (which supports the idea that no group should dominate another referring the class differences between developing and developed nations), 5) fight against pollution and resource depletion, 6) complexity, not complication (which emphasises valuing natural and human complexity where diverse parts work together meaningfully as opposed to over complication, which is chaotic and disconnected, encouraging integrated, thoughtful systems rather than fragmented ones) and 7) local autonomy and decentralisation. All these principles of the deep ecology movement do not come directly from science or logic but are based on inspiration and strengthened by what ecologists learn from nature and how they live and work closely with it (Naess, 2008). Deep ecology does not advocate for a new environmental ethic nor suggest change for the fundamental values, but highlights the need for transformation in environmental policy for a more holistic approach (Glasser, 1996).

Another influential movement is Ecofeminism. Ecofeminism, as part of a broader spectrum of ideologies and frameworks based on ecocentric values, also advocates for environmental justice and critically examines the ethical implications of human actions on the environment. Central to ecofeminist thought is the recognition of the interconnected oppressions of women and nature (Fawcett et al., 2002), which are supported by dominant conceptual frameworks such as anthropocentrism and andropocentrism which are characterised by the ‘unjustified domination’ of certain groups, reinforcing systemic inequalities (Aug, 2021, p. 2). Lin et al. (2021) identify patriarchy and anthropocentrism as particularly harmful systems that have resulted in imbalances within human societies, adversely affecting our connections with each other, the Earth, and its non-human inhabitants. While the relationship between woman and nature is symbolised as 'Mother Nature,' traditionally invoking a sense of sacredness for the environment akin to the sacredness of 'mother,' the oppressed nature of their connection reveals a darker reality (Aug, 2021). Challenging dominant worldviews, ecofeminism calls for a re-evaluation of those worldviews and a transformation toward more inclusive and equitable relationships with all forms of life.

For the transformation to happen, a change in environmental policy and law is required, which has long enabled the destruction of nature for profit, often framed as development (Gupta, 2024a) in the form of ‘aggressive anthropocentrism’ (Bonnett, 2018, p. 1090). Mies &

Shiva (2014) assert that, ecological shift is essential, which 'creates the imperative to live, produce and consume within ecological limits and within our share of ecological space, without encroaching on the rights of other species and other people' (Mies & Shiva, 2014, p. 16). Recognising the era of anthropocentrism and the influence of human-centred values across different fields, a shift toward an ecocentric philosophy is needed in environmental policy and governance, as current legal frameworks largely define ecosystems by the services they provide to humans (Gupta, 2024a).

Given that anthropocentrism and ecocentrism inevitably shape individuals' beliefs, they are a central focus in frameworks measuring environmental beliefs, which is explored in the following section.

2.2.3. Anthropocentrism and ecocentrism: measurement frameworks

In this section, I examine anthropocentrism and ecocentrism by considering their object-based and relational dimensions, and then discuss the frameworks and instruments developed to assess environmental beliefs.

As a long-standing debate, anthropocentrism and ecocentrism (or biocentrism) have been either considered independent – an individual may hold only one of these beliefs or interdependent – the two notions overlap, thus environmental problems can be better understood and tackled if both world views complement each other. According to the New Ecological Paradigm (NEP) (Dunlap & Liere, 1978) scale, an individual can have either anthropocentric or ecocentric beliefs but not both at the same time. However, the Model of Ecological Values (MEV) postulated by Wiseman & Bogner (2003) focuses on specific ecological values and attitudes, those that might influence behaviours such as recycling or support for conservation and presents two dimensions: preservation (ecocentric dimension) and utilisation (anthropocentric dimension) which the authors claimed can overlap with one another.

In certain contexts, anthropocentrism and ecocentrism are differentiated by their focus, with the former being object-oriented, seeing nature as a collection of objects - resources, whose value is determined by their usefulness to humans, and the latter being relation-oriented, highlighting the interconnectedness of all living and non-living entities. This distinction aligns with Maurice's (2006) differentiation between two types of worldviews that influence shaping the perception of nature: vertical which is hierarchical and places humans or god at the top and horizontal which is egalitarian and where there is no one at the top.

Various frameworks and tools have been developed to measure anthropocentric and ecocentric beliefs and their corresponding object- and relation-focused approaches. A similar hierarchical framework is presented by Loughland et al. (2002) where the nature-human relations are measured from two viewpoints: the object view and the relations view (Table 7):

	Object focus	**Example**
Conception 1	The environment is a place	'the thing around us'

		‘the world’ ‘the bush’
Conception 2	The environment is a place that contains living things	‘a habitat for animals, the rainforest is the environment for animals’
Conception 3	The environment is a place that contains living things and people	‘all living and non-living things and people on the planet earth’
	Relational focus	
Conception 4	The environment does something for people	‘all aspects of animal and plant life and atmosphere; not just concerning trees but oceans, land and life in general contributing to our wellbeing’
Conception 5	People are part of the environment and are responsible for it	‘helping clean up our land, keeping it clean, helping animals in our environment’
Conception 6	People and the environment are in a mutually sustaining relationship	‘that we should care for it and it will look after us’

Table 7. Environment-human relationship (Loughland et al., 2002, p. 192)

As seen in the table above, conceptions 1, 2, and 3, treat the environment as a physical space or collection of living and non-living things, often emphasising the environment's role as a resource or habitat. Relation-focused conceptions highlight the interconnectedness and interdependence between humans and the environment, emphasising the reciprocal relationship between people and nature, where the environment provides benefits to humans (conception 4) and humans are responsible for maintaining and nurturing the environment (conception 5), culminating in a mutual, sustaining relationship (conception 6).

Another framework for measuring environmental beliefs is the New Ecological Paradigm (NEP) which was established by Dunlap & Van Liere (1978) in response to the anti-ecological dominant social paradigm and revised by Dunlap et al. (2000). The Framework originally consisted of three dimensions, but later the authors developed the dimensions into five, measuring different facets of environmental perspectives: the reality of limits to growth, anti-anthropocentrism, the fragility of nature’s balance, rejection of exceptionalism, and the possibility of an ecocrisis (Dunlap et al., 2000, p. 432). NEP places a human on either side of the continuum, suggesting that individuals can have either an anthropocentric or ecocentric worldview but not both.

Stating that NEP measures only one worldview, Bogner and Wiseman (2003) designed the Model of Ecological Values (MEV), which presents two values that may overlap with one another: the anthropocentric Utilisation (UT) and the ecocentric Preservation (PRE) (Figure 7).

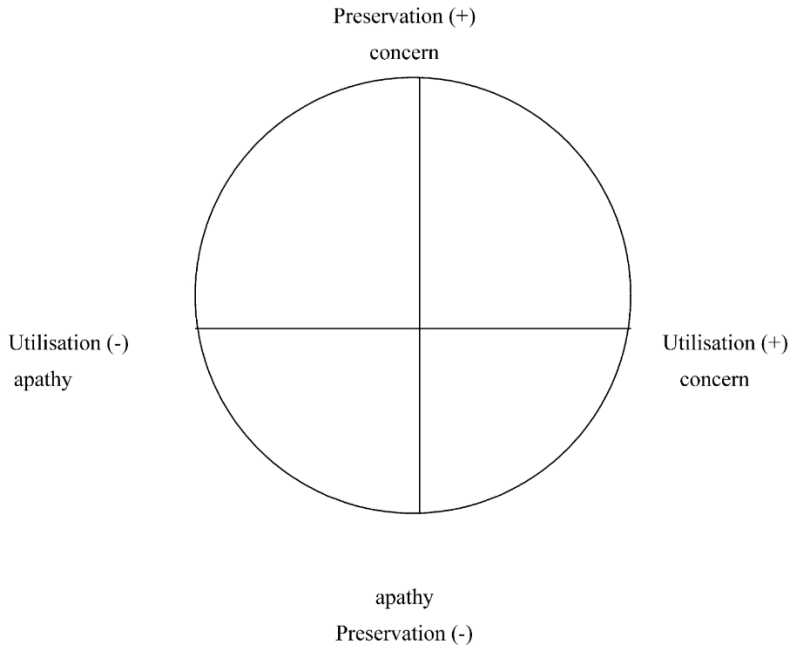

Figure 7. The model of ecological values (Wiseman & Bogner, 2003)

A strong environmentalist can have a high score on preservation and a low score on utilisation (PRE+ UT-), while someone who views nature as a source of natural resources can have a low score on preservation but a high score on utilisation (PRE- UT+). Besides, they claim that an individual may hold strong anthropocentric and ecocentric views simultaneously: he/she can have a high score on preservation, indicating a strong desire to protect the environment, but at the same time, believe that the primary purpose of nature is to benefit humans (PRE+ UT+). The authors see candidates in the PRE-UT- quadrant as a potential "problem", stating they are unlikely to change their ecological behaviour as they are not interested in the topic.

Reflecting on the literature, it can be concluded that ecocentrism and anthropocentrism are generally regarded as major environmental belief structures in environmental measurement frameworks, distinguished by their focus on either object or relational perspectives. Supporters of both worldviews are concerned about preserving the environment but their motives for preservation may be different: anthropocentrics are much concerned with preserving the environment for the sake of their comfort while ecocentrics protect the environment for the sake of the environment itself (Thompson & Barton, 1994). Some frameworks suggest individuals hold either anthropocentric or ecocentric beliefs, while others argue these beliefs can overlap within a single belief system, allowing a person with predominantly ecocentric views to also exhibit anthropocentric tendencies, and vice versa.

In the next section, I examine how anthropocentrism and ecocentrism manifest in teachers' beliefs on the environment.

2.3. Teachers' beliefs about the environment

Environmental education has attracted greater attention due to the increasing magnitude of environmental problems recently and in environmental education research teachers have been the focus of research and are considered to be one of the key figures in promoting environmental education at schools (Blyth & Meiring, 2018; Farias et al., 2018; Gyberg & Löfgren, 2016; Lwo et al., 2017; Novelli & Sayed, 2016; Stanišić & Maksić, 2014; Timm & Barth, 2020; Yavetz et al., 2014). As indicated in the introduction, it is important to study teachers' beliefs because: 1. Teachers' beliefs influence their classroom practice (N. S. Evans et al., 2012; Fives & Buehl, 2012; Nation & Feldman, 2021; Skott, 2015); 2. Beliefs are the focus of change in teacher education programs (Korthagen, 2004; Richardson, 2003; Tillema, 2000); 3. Teachers' beliefs assist successful implementation of curriculum materials (Cotton, 2006a; Skott, 2015); 4. Teachers' beliefs are important in achieving teacher agency (Biesta et al., 2015).

Exploring pre-service teachers' perception of the environment Yavetz (2014) states that "understanding how learners conceptualise 'environment' may contribute to more effective environmental education" (p. 354). Understanding of the concept 'environment' contributes to how individuals perceive environmental challenges and the ways of overcoming them (Ahi et al., 2017). Considering teachers' beliefs and knowledge about the environment and environmental education influences students' perceptions and knowledge of the environment (Türkoğlu, 2019, pp. 4–5) since teachers 'transmit their perceptions to children in the classroom' (Desjean-Perrotta et al., 2008, p. 24) and are the most significant agents in implementing environmental education (Ahi et al., 2017; N. S. Evans et al., 2012; Yücel & Özkan, 2018), it is important to understand teachers' mental models of the environment that can further help teacher educators develop teachers' environmental teacher training programs based on existing mental models (Moseley et al., 2010). Teachers who have sufficient knowledge, training, and resources to effectively teach about the environment can have a lasting impact on their students (Ashmann & Franzen, 2015; N. S. Evans et al., 2012). Considering the success of environmental education depends on teachers (Ashmann & Franzen, 2015; Moroye, 2009; Yavetz et al., 2014) exploring teachers' beliefs can be a powerful tool (R. B. Stevenson, 2007), especially in developing countries (Benavides-Lahnstein & Ryder, 2020; Türkoğlu, 2019) like Azerbaijan which is still in the early stages of implementing environmental education.

Although MEV suggests interdependence between anthropocentrism and ecocentrism, some research results show the opposite where research results do not overlap what MEV purposes and where in-service and preservice teachers clearly were either in ecocentric or anthropocentric groups (Munoz et al., 2009; Quinn et al., 2016). One of the most comprehensive research studies indicating this was conducted by Munoz et al. (2009), involving 6,379 pre-service and in-service teachers from 16 countries, including 12 European and 4 non-European countries. The investigation into the environmental beliefs of teachers in

these countries revealed that utilisation beliefs were unrelated to ecocentric beliefs, as anthropocentrism and ecocentrism are distinct components that oppose each other. Moreover, the study found that anthropocentric beliefs were more dominant in less developed non-European countries. As a developing country, in Azerbaijan teachers' anthropocentric beliefs might be related to their socio-economic backgrounds, however, it is beyond the scope of my research to investigate this further.

By applying Reigota's classification (2007) of the environmental representation – naturalistic, anthropocentric and globalising, Farias et al. (2018) analysed the environmental perception of 41 teachers of two public schools in Brazil through drawings and questionnaires. One of the schools was located in an environmentally preserved area while the city of the other school was highly impacted by environmental problems. Despite the schools being located in areas with varying degrees of environmental impact, teachers from both schools predominantly held a naturalistic view of the environment that aligns with ecocentrism which evaluated the environment within its natural boundaries, while a few had an anthropocentric view.

Ballantyne (1995) evaluated in-service teachers' perception of the environment that attended a post-graduate environmental teacher education program at the Queensland University of Technology before and after the course to identify a change in their conception of the environment. Analysing questionnaires and personal journals, he presented teachers' beliefs of the environment that broadly fell under three categories: the egocentric conception which focuses on the idea that people can make use of the environment, the guardianship conception which aims to protect the environment and the ecocentric conception that states humans and the environment are interrelated. This research found that the dominant view amongst teachers was the guardianship conception before and after the course which is in line with findings by Farias et al. (2018). Though conducted more than twenty years later, the majority of teachers in both studies represent ecocentric worldviews. Similarly, research conducted by Lwo et al. (2017) to measure secondary school teachers' beliefs about the environment in Taiwan using the NEP scale found that nearly 2/3 of teacher participants had ecocentric beliefs towards the environment and they are concerned about environmental issues and discuss them with their students. However, teachers also thought that this would be a time-consuming process to instil people with environmental ethics.

In contrast, research that has been undertaken by Desjean-Perrotta et al. (2008) among pre-service teachers in the USA, shows that the majority of teachers hold an anthropocentric view of the environment and do not see the environment as interconnected with its components. Similarly, Moseley et al. (2010) found that pre-service teachers' mental model of the environment are incomplete since a few teachers presented a systemic approach and saw humans as part of the environment. Seeing humans separate from nature was a theme that was encountered among preservice and in-service teachers in other contexts as well (e.g. Ahi et al., 2017; Yavetz et al., 2014). Moreover, recent work of researchers indicates anthropocentric worldviews dominate in education - in everyday environmental decision-

making (Altmeyer & Dreesmann, 2020), in textbooks (Biström & Lundström, 2020), official educational policy (Quinn et al., 2016) where humans are presented as an independent "agentic creator" while the environment is seen as a dependent "non-agentic subject" (Ross, 2020).

Yavetz et al. (2014) identified the following three categories related to pre-service teachers' understanding of the environment in Israel: a) a romantic perception focusing on the esthetic nature of the environment; b) environmental quality focusing on negative human activity and preservation of nature; c) a dual perception that stresses human-nature interaction, negative consequences of human impact. Similar to the findings by Desjean-Perrotta et al. (2008), Yavetz et al., (2014) also found out that though teachers may hold different approaches towards the environment, very often their perception of the environment is limited as they fail to see the environment as a system in a continuous relationship with its components.

A general pattern that seems to emerge from research exploring teachers' beliefs is that: a) teachers hold a diverse range of beliefs about the environment; b) teachers' beliefs about the envrionment might be incomplete; c) all the studies mentioned above explore teachers' self-stated beliefs though beliefs can be researched through observational studies.

2.3.1. Drivers of teachers' environmental beliefs

The influencing factors on teachers' beliefs about the environment can be different, considering beliefs are shaped by cultural, historical, social, and personal experiences that provide meaning and significance (Morrison, 2018). From this point of view, teachers' beliefs about the environment may be influenced by different factors, including 1) their social background (Benavides-Lahnstein & Ryder, 2020; Moroye, 2009; Munoz et al., 2009; Saul, 2000) and 2) the content of their teaching and learning (Buehl & Fives, 2009; Moroye & Ingman, 2018; Munoz et al., 2009; Sherfinski et al., 2022). The influencing factors discussed here are not exhaustive and can be further explored in future studies.

Social background. Beliefs are not isolated constructs and are deeply rooted within the context they derive (Morrison, 2018). Similarly, teachers' connections to the places where they lived and worked - 'place-based understanding' has a profound impact on their beliefs about the environment and their pedagogies (Sherfinski et al., 2022).

The role of cultural heritage in establishing the relationship with the environment has been the focus of inquiry by many researchers. For instance, exploring Bavarian and Danish students' environmental perception, the study by Bogner & Wiseman (1997) found that the European cultural heritage has deep roots in students' understanding of the environment. The ethnographic category – ethnographic current was one of 15 currents observed by Sauvé (2005) in the content of EE, highlighting the link between nature and culture. She expresses her concerns about the culture of Indigenous people and stresses the importance of not imposing Western culture but allowing nations to be heard and promote and protect their culture and cultural belonging. Thus bringing the importance of the environment of cultural

identity, she states that “not only pedagogy should be adapted to different cultural realities, but also that inspiration be drawn from the pedagogy of these diverse cultures, which have another relationship to the environment” (p. 27), for instance, Amerindian fables develop a sense of empathy for the environment.

According to Milton (1997), in the past several decades, there have been several approaches in ecological anthropology, the field that is concerned with exploring how people relate to their environment. While environmental determinism accepts the ultimate role of the environment in shaping cultures, cultural ecology claims that not all environmental factors play an equal role in shaping culture; instead, the extent to which specific environmental factors influence particular cultural features can differ as a result of adaptation to that environment. The ecosystem model suggests that human beings are organisms (they are not social or cultural beings) and are linked to their environments through material values rather than cultures. In contrast, the ethnoecology approach argues that cultural diversity stems from different personal and social experiences. Similarly, Ingold (2000) asserts that perception (how it is perceived by local people) and interpretation (how it is interpreted by local people) of certain cultural constructions should be explored within their contexts.

Despite the arguments that different scholars bring to support their approaches, they accept the role of the environment in shaping cultures, while the extent of this role differs. For this reason, the nature-culture debate has been a focus of inquiry for many years, though Ingold (2000) calls it “a stale dichotomy” (p. 16) and proposes a new one – organism and environment. Ingold replaces the nature/culture divide with the organism/environment distinction to move beyond the strict separation that makes scientific and indigenous knowledge inherently unequal. The traditional nature/culture split presents scientific observation as objective and logical, while treating indigenous knowledge as merely subjective “beliefs” (p.16), implicitly ranking one above the other. By using the organism/environment approach, Ingold focuses on the active, ongoing relationship between living beings and their surroundings, showing life as a process where both shape each other - culture might influence environmental beliefs because it frames knowledge as embedded in lived experience rather than as abstract, externally defined concepts. It allows us to see that cultural ways of understanding the environment are not wrong, but are practical, context-based forms of ecological knowledge that grow from the interaction between people and the world around them. He further adds that organism and environment do not entail two separate entities but denote “one indivisible totality” that is a dynamic process (p. 19). Similarly, Dwyer (1996) introduces the paradox of the nature-culture debate: on the one hand, he labels them as separate and distinct categories, on the other hand, he refers to them as the different sides of a continuum.

Both anthropologists – Ingold and Dwyer, are concerned about revealing the essence of nature and culture and propose two similar but, at the same time, different approaches. To

Ingold, culture is the interpretation of nature while Dwyer 'invents' nature through culture. Exploring Kubo tribes in Papua New Guinea, Dwyer (1996) writes:

> To Kubo the land is a web of past and present human action and interaction and it is of these events that men, women and children speak when they walk together in the forest. (p. 167)

Similarly, Ingold (2000) questions:

> Is it through the transfer of such beliefs and propositions from one generation to the next that we learn to perceive the world in the way we do? … One answer might be to suggest that it is through its inscription in such objects or features – plants and fungi, waterholes and hills – that cultural knowledge is transmitted. (p. 21)

In both passages, nature is the source of cultural understanding – land, plants, fungi, waterholes, hills – all reflect cultural elements. Nature and culture are closely related and develop in tandem though the nature of this relationship is different. To Ingold, culture is the reflection of nature. To Dwyer, there is no such a notion as 'nature', it is all about culture: "there is no nature, no contrast… through a process of cultural accretion, is the potential to invent nature" (p. 178).

Another controversial part of the nature-culture debate is the meaning nature entails in different societies. The way nature is perceived and interpreted is different and this diversity is reflected in cultures, for this reason, trying to apply Western thoughts to all cultures can be misleading (Dwyer, 1996; Milton, 1997).

Besides, according to Milton (1996), there can be different cultural interpretations of environmental beliefs. If some people cut the trees while others take a few branches of some trees, this can have economic reasons – because they need the whole tree or aesthetic reasons – they love the trees to stand in where they belong to, or religious reasons – they are afraid to make God angry, or personal comfort – trees may provide shade.

Considering the extent of surrounding contexts of cultural norms and values influence teachers' beliefs and knowledge (Hoy et al., 2006), where the quality of life is constrained and critically imposed by the area where they live, human lives seem to have little value, which may trigger human superiority since research results indicate that in less developed countries teachers' beliefs were primarily anthropocentric (Munoz et al., 2009). Moreover, lived experience is one of the critical factors that influence geographical consciousness[1] and teachers usually relate lived experiences to their teaching about the environment since a "sense of place and curiosity can encourage and drive an individual to embrace a lived experience and to make meaningful connections" (Wepener & Pretorius, 2023, p. 11).

Content of the teaching. Teachers' beliefs often reflect the courses they teach, as "teachers often teach the content of a course according to the values held of the content itself" (Pajares, 1992, p. 310). Consequently, teachers' environmental perceptions influence their lesson planning, and the realisation of ecological beliefs depends heavily on the curriculum

[1] A geographically conscious individual is someone who takes on responsibility and ownership for the well-being of the bio-physical environment, who considers the collective good of others and who desires to contribute towards sustainable development (Wepener & Pretorius, 2023, p. 11)

content (Moroye & Ingman, 2018). Curricula and textbooks are closely interlinked since textbooks are developed based on political decisions that shape the development and implementation of new or existing curricula (Trædal et al., 2022).

As an important educational resource, the content of textbooks, as well as geography textbooks has been researched extensively in different contexts from diverse perspectives (Ayane & Mihiretie, 2024; Cho et al., 2022; Kowasch & Lippe, 2019; Krause et al., 2022) though with little focus on environmental values (Biström & Lundström, 2020; D'Apice & Bromley, 2023; Gugssa et al., 2020; Neo & Schneider-Mayerson, 2022). Stressing the importance of geography and biology textbooks for promoting action competence in ESD in Sweden, Biström & Lundström (2020) argue that poorly designed textbooks can limit students' potential to critically assess sustainability as the environmental dimension of sustainability is discussed from an anthropocentric point of view, and fails to discuss the relationship and differences between ecocentric and anthropocentric perspectives. A similar perspective has been noted by Gugssa et al. (2020) and by D'Apice & Bromley (2023) who assert that an anthropocentric representation of environmental science textbooks in Ethiopian primary schools and an anthropocentric approach to climate change with a focus on human progress in US history textbooks can be barriers to participation in environmental activities. Examining all lower-secondary-level history textbooks, published between 1984 and 2015 Neo & Schneider-Mayerson (2022) found out that humans were frequently depicted as separate and distinct from the environment predominantly holding a utilitarian perspective towards it.

In addition, although there is substantial empirical evidence of teachers' beliefs about the environment, there remains very limited research on how these beliefs of teachers are enacted in their classroom practice and there is nearly no research exploring teachers' beliefs about the environment in Azerbaijan, a gap that this study aims to address.

2.4. Environmental education and teachers' beliefs

In this chapter, I explore the concept, objectives, and pedagogical practices of environmental education (EE), along with teachers' beliefs about these dimensions. The discussion begins with a broad overview of EE, highlighting the complexity of its origins, terminologies, and the conceptual frameworks that guide its implementation. I then examine the objectives of EE, whether cognitive, affective, or conative and how these aims influence educational outcomes. Further, I consider teachers' perspectives on EE, analysing how their beliefs, disciplinary backgrounds, and practical challenges shape their approaches to teaching about the environment. Lastly, I address the pedagogical methods used in EE encompassing both direct and vicarious learning experiences and examine how the desired balance between these two approaches is often constrained by systemic and resource-based barriers.

2.4.1. EE Terminologies

Although there is ongoing scholarly debate regarding the origins of the term environmental education (EE), it is clear that a major turning point for EE occurred after the 1972 United Nations Conference on the Human Environment in Stockholm and the world's first Intergovernmental Conference on Environmental Education held in Tbilisi in 1977 (Benavides-Lahnstein & Ryder, 2020; R. L. Carter & Simmons, 2010). Since then, the development of environmental education has seen different conceptual terminologies and differing definitions and objectives. Though referred to differently as environmental education for sustainability (Tilbury, 1995), education for sustainable development (Sandell et al., 2005), education for sustainability (N. S. Evans et al., 2012), climate education (Anderson, 2024), climate change education (Mochizuki & Bryan, 2015), ecological education (Kim et al., 2025; Shaikhiev & Kadyrova, 2002) and most recently as multispecies justice-oriented education (M. H. Saari, 2025), all these terminologies share a common focus on addressing ecological, social, and climate-related challenges through interdisciplinary and transformative educational approaches, with ecological and multispecies education additionally emphasising the intrinsic value of all beings and promoting harmonious coexistence with all living and non-living entities. In my research, I use the term EE to collectively refer to teaching and learning activities that fall under those varied terminologies.

2.4.2. The concept of EE and its objectives

Given the broad scope (R. L. Carter & Simmons, 2010; Winther et al., 2010) and the interdisciplinary nature of environmental education (Chang & Kidman, 2025; Clark et al., 2020; Kim et al., 2025; Summers et al., 2005), defining its curricular content presents challenges. Sauvé (2005) investigated the content of environmental education over a thirty-year period and brought up fifteen currents. Sauvé (2005) defined a current as 'a general way of envisioning and practising environmental education' (p. 12) observed within environmental education programmes. Some of these currents have a long history while others emerged as a response to recent developments in environmental education (Figure 8). The currents offer a typology of how environmental education is conceptualised and practiced and highlight the 'richness' of pedagogical provisions within the field (p. 31).

Among those Currents with a Longer Tradtion in Environmental Education	Among those Currents more Recently Emerged in Environmental Education
1. Naturalist Current	8. Holistic Current
2. Conservationist/Resourcist Current	9. Bioregionalist Current
3. Problem-Solving Current	10. Praxic Current
4. Systemic Current	11. Socially Critical Current
5. Scientific Current	12. Feminist Current
6. Humanist/Mesological Current	13. Ethnographic Current
7. Value-centered Current	14. Eco-Education Current
	15. Sustainable Development/ Sustainability Current

Figure 8. Fifteen currents in Environmental Education, table from Sauvé (2005)

Sauvé's classification reflects an interdisciplinary synthesis of diverse approaches, highlighting the broad and multifaceted objectives of EE. These currents do not exist in isolation, they overlap, with long-established currents serving as foundations for emerging ones and their value should be assessed based on their worldview and suitability for specific pedagogical contexts.

All these currents reflect either anthropocentric or ecocentric environmental beliefs, or exhibit characteristics of both. Sauve's classification of currents does not necessarily reflect anthropocentrism from a negative or destructive perspective but instead reflects the richness of environmental education and emphasises humans' potential to mitigate environmental challenges. For example, as in the humanist current, which reflects an interdisciplinary approach, learning about the environment does not entail just learning about a collection of natural elements but a lived space shaped by historical, cultural, political, and emotional dimensions, making it both a natural and cultural heritage. This perspective highlights the interaction between human creativity and nature, seen in architecture, urban spaces, and rural landscapes.

In some currents, there is a clear alignment between anthropocentrism and ecocentrism, for example, the naturalistic or ecological education currents align closely with ecocentrism, while the resourcist current aligns with anthropocentrism. In other instances, however, the anthropocentric or ecocentric perspective is more subtle. For instance, for the problem-solving or scientific current the environment primarily is a problem or an object of knowledge that humans are capable of understanding and addressing, aligning with what Sandell et al. (2005) describe as 'fact-based' environmental education, in which humans are expected to solve environmental issues through scientific research (p. 160). Current debates on integrating environmental education with interdisciplinary subjects like STEAM (Science, Technology, Engineering, Arts, and Mathematics) highlight a key issue that sustainability education often focuses too much on either scientific causes and engineering solutions or on

the social, political, and economic impacts of sustainability policies, emphasising the need to shift from a multidisciplinary approach to a true interdisciplinary one (Chang & Kidman, 2025).

Besides fact-based (anthropocentric) EE, Sandell et al.'s (2005) classification of major traditions in environmental teaching includes normative (ecocentric) and ESD traditions. While fact-based EE emphasises knowledge and problem-solving through scientific research, viewing humans as problem solvers who protect nature primarily for human benefit, normative EE aligns closely with ecocentrism, viewing humans as integral parts of the natural environment. ESD encourages critical evaluation of conflicting perspectives without strictly endorsing one ethical position, promoting critical thinking among students. These traditions underscore the ethical foundations in environmental education that shape its objectives, content, and pedagogical approaches, highlighting a critical discussion within the field about what environmental education should deliver.

Mochizuki & Bryan (2015), drawing upon UNESCO's International Commission on Education for the Twenty-first Century report (1996), outline a comprehensive educational framework regarding the objectives of EE consisting of three pillars: learning to know (environmental knowledge), learning to do (practical and cross-cutting skills such as critical thinking, creativity, and social transformation) and learning to live together and learning to be (fostering empathy, ethical values, and behavioural changes). Achieving these competencies collectively guides learners to become empowered change agents and capable of taking meaningful environmental actions.

However, research indicates that teachers often struggle to balance cognitive, affective and conative aspects within EE. Research findings of the past three decades indicate EE assessments have prioritised cognitive knowledge, with exam preparation often overshadowing affective learning or real-life environmental engagement (Almeida, 2014; Anderson, 2024; Stimpson, 1994) although teachers believed environmental education should be embedded in students' daily practices and should equip them with the necessary skills (Almeida, 2014; Anderson, 2024). Moreover, recent research, increasingly emphasises action-oriented learning, advocating going beyond mere awareness and knowledge toward developing genuine environmental competencies and skills that promote individual and collective actions (Jiglau et al., 2025; Portus et al., 2025; Salovaara et al., 2025). The incongruence between teachers' beliefs and practices, along with its underlying causes, is explored in Section 2.5.

2.4.3. Teachers' beliefs about EE and its objectives

Teachers' beliefs about the environment are often examined through established frameworks such as Sauvé's typology of EE currents. Applying Sauve's typology of EE currents to explore primary school teachers' beliefs of EE in Ecuador, Viteri et al.'s (2013) findings indicate that primary school teachers' beliefs about environmental education were predominantly aligned with a conservationist/resourcist current, with limited influence from

alternative approaches such as feminist or value-centred currents. Another study that employed Sauve's typology indicates that, in the Mexican context, partial associations are relevant to illustrate that teachers' beliefs of EE since teachers' beliefs of EE do not align with a single current, thereby underscoring the need for complementary approaches to better contextualise these beliefs within their social and cultural settings (Benavides-Lahnstein & Ryder, 2020). These studies reveal that while Sauvé's typology is a useful lens, teachers' beliefs about EE are complex and context-dependent, often requiring a more nuanced and flexible interpretive approach.

Different factors might influence teachers' beliefs of EE and its objectives, including their teaching disciplines, personal experiences (Jenkins, 2000; Kim et al., 2025) and their beliefs about the environment (Benavides-Lahnstein & Ryder, 2020; Gugssa & Aasetre, 2022). For instance, social studies teachers prioritise historical awareness, whereas science teachers emphasise scientific literacy, though they all agree on the necessity for transformation, highlighting that the primary focus should be fostering coexistence between human and non-human entities, challenging dominant anthropocentric perspectives, and promoting active engagement (Kim et al., 2025).

Pre-service teachers' perceptions of EE also differ across traditional subjects such as science and social science, and non-traditional subjects such as music and drama, since teachers of traditional subjects tend to emphasise learning *about* (cognitive skills) and *in* (investigative skills) the environment while teachers in non-traditional areas emphasise learning about and *for* (affective) the environment (Jenkins, 2000).

Learning *about* the environment was observed across different levels and contexts. A study by Flogaitis et al. (2005) reveals that Greek kindergarten teachers predominantly view environmental education as a means to convey knowledge about nature and the environment, reflecting the common 'education about the environment' approach (p. 130). Similarly, in the Australian context, pre-service teachers' beliefs revealed a strong emphasis on education about ecological systems and environmental issues, but they also highlighted the importance of a more action-oriented, *hands-on* approach that is local, relevant, and engages learners actively (N. S. Evans et al., 2012). The findings of the study by Türkoğlu (2019) indicate that both preschool and pre-service teachers in Türkiye view environmental education primarily as a means to raise children's awareness and knowledge about the environment, though they differ in their emphasis on responsibility, perceived benefits, influencing factors, and challenges in practice. These studies highlight a shared foundation of environmental awareness across contexts, but also reveal the nuanced tensions between knowledge delivery and the transformative potential of action-based learning.

Moreover, teachers' beliefs regarding EE and its objectives depend on how teachers perceive the environment. Gugssa et al. (2022), exploring the perspectives of Ethiopian primary school teachers on the environment and EE, found that teachers' views on environmental education: 1) object-focused, where the environment is seen as a distinct

physical entity; 2) utility-based, where the environment is viewed as a resource for human benefit and well-being; and 3) interactional, where the environment is seen as a network of relationships aligns with their beliefs on environmental education: 1) knowledge acquisition, focusing on imparting environmental information to students; 2) resource utilisation, seeing natural resources as means for human exploitation; and 3) environmental care, considering education as a tool to promote desired pro-environmental behaviours among citizens. This alignment indicates that teachers' underlying beliefs about the environment shape their approach to environmental education, reflecting whether they prioritise knowledge transmission, human-centred resource management, or fostering responsible environmental behaviour.

Although these studies show teachers may hold differing beliefs about the objectives of EE in different levels and contexts, the delivery of knowledge is central to their teaching practices.

Teachers' beliefs of EE and its objectives influence how they implement EE since 'What they (teachers) do in their schools and classrooms is a reflection of their perspective or world view, their personal practical theory, their beliefs, and their values' (Hart, 1996, p. 42) within EE. The following section will examine pedagogical approaches employed in the teaching of EE, along with teachers' beliefs about these approaches.

2.4.4. Pedagogical approaches within EE

EE is a broad area with a range of goals (R. L. Carter & Simmons, 2010; Winther et al., 2010) and according to Winther et al. (2010), not a single pedagogical approach can be considered 'right' for all and depends on certain factors:

> The approach that will work best in any given case depends on numerous factors including, but not limited to: student interest, maturity, age, and abilities; the curricular goals being addressed; and the instructional setting including resources and the time available for instruction. It also depends on the knowledge, skills, interests, and educational philosophy of the instructor or instructors involved. (p.31)

Though pedagogical approaches to EE depend on multiple contextual factors, as well as teachers' philosophical and pedagogical orientations, EE is primarily acquired through two approaches: direct experiences that involve direct engagement with learners' surrounding and vicarious learning experiences where learners learn about the environment in a classroom or similar setting (e.g. Duerden & Witt, 2010; Kil, 2016; Sun et al., 2023). In exploring how learners acquire new behaviours, Bandura's (1977) social cognitive theory proposes two primary modes of learning: a) enactive learning - based on personal experience and b) vicarious learning - experience through observing others perform. Similar learning approaches were deemed important in environmental education by Kellert (2002), who differentiates between direct, indirect, and vicarious (or symbolic) experiences in teaching about the environment. Both direct and indirect experiences require engagement with the environment.

While direct experiences involve natural settings free of human intervention (e.g. nearby forest), indirect experiences occur in human-manipulated nature settings such as botanical gardens or science museums. In contrast, vicarious experiences occur 'in the absence of actual physical contact with the natural world' through 'vicarious images of nature' such as books, magazines, films, etc (p. 119-120).

A substantial body of academic literature underscores the significance of direct experiences and empirical research findings indicate that direct experiences in nature can significantly improve environmental thinking, attitudes, behaviours and positively impact students' connectedness with nature (Ajaps & McLellan, 2015; Bezeljak et al., 2023; Christ & Dreesmann, 2022; Duerden & Witt, 2010; Garip et al., 2021; Keith et al., 2022; Kil, 2016; Lawrence, 2012; Loughland et al., 2002; Lugg & Slattery, 2003; Moroye & Ingman, 2018; Reid, 2000; Spahiu et al., 2014; Wepener & Pretorius, 2023).

Moreover, classes held outside the typical classroom setting help students make connections between their personal experiences and environmental problems (Portus et al., 2025). Parallel to the human world, an 'other-than-human' world exists where communication and meaning-making are extended beyond written text and where a certain place is perceived as a form of text and nature serves as a co-teacher (Häggström et al., 2020). Being immersed in the environment helps students build a connection with nature and perceive themselves as part of the environment, which in turn fosters pro-environmental behaviours (Ajaps & McLellan, 2015) and shapes ecocentric beliefs (Kil, 2016).

However, this transformation does not occur automatically in every nature activity and not all forms of nature-based learning promote ecocentric values. Some may instead reflect anthropocentric values. Analysing a 10-minute episode titled 'Take it Outside! Adventures in Nature with Steam' from a nature-based learning webinar Ross (2020) reveals intriguing aspects of nature-based education that, while seemingly environmentally focused, tend to prioritise human-centred perspectives:

> All of the words and phrases used to reference what nature entails throughout this segment can be characterised as a general adjective, something man-made, a product intended for human consumption, a human activity, or an element of nature… References to nature including 'a park,' 'garden,' or 'fish tank' insinuate that nature itself isn't necessarily an independent entity – it is something that humans are capable of creating as well… These descriptions incorporate natural forms as they have been rearranged, manipulated and changed under the umbrella of nature, thus situating nature as something human – nature mediated by a human... (p. 362-363)

According to Ross (2020), it reflects a view where nature is seen not as an entity with its own intrinsic worth, but as something that can be shaped, manipulated and changed by human intentions. Another point raised is whether children are engaged in an environmentally conscious way and if teachers truly understand what nature-based learning involves. The analysis suggests that this may not be the case, as many teachers believe that simply being in nature, regardless of the activity, qualifies as nature-based learning while adding environmentally relevant content to the curricula would not be sufficient and does not always

entail eco-centric education due to deeply embedded anthropocentric tendencies (Ross, 2020). For students to genuinely develop a meaningful connection and adopt environmentally conscious perspectives, they require guidance from educators which ensures that interactions with nature are not only engaging but also foster a deeper understanding of environmental preservation (Ross, 2020).

An emphasis on direct learning does not diminish the significance of vicarious learning experiences. While relying on classroom teaching and in the absence of out-of-school or extracurricular activities, students may still exhibit moderate levels of environmental knowledge and cognitive skills, along with high levels of environmental behaviour and affect (Takyi et al., 2023). Similarly, exploring the influence of high school students' vicarious learning on their environmental behaviour, Sun et al. (2023) found that vicarious experiences promote positive environmental behaviour and establish an emotional connection with nature. Though always a subject of attention, the importance of vicarious learning became one of the debated areas during the COVID-19 pandemic period, when students had limited opportunities for outdoor experiences for environmental exploration (Sun et al., 2023) and especially when students lost their access to vicarious learning since all the learning processes dominantly relied on online teaching (Legg, 2023).

A balance between direct and vicarious experiences with nature is considered to provide meaningful opportunities for deepening understanding and connection with the environment (Kellert, 2002). The research findings by Morrison (2018) indicate five practices that the ecologically minded[1] teachers refer to while teaching about the environment, which include both direct and vicarious learning experiences: exposing externalities, emphasizing active learning, providing multiple perspectives, asking critical questions, and collaborating with others. Although the teachers in the study were passionate to integrate environmental education into their classrooms, their efforts were constrained by systemic barriers, student resistance, and socio-emotional complexities, revealing that personal beliefs alone are insufficient to enact agency and there is a need for greater institutional support, resources, and professional development to empower teachers.

Teachers consistently emphasise the importance of outdoor, hands-on environmental education, yet they encounter a range of systemic and resource-related barriers. According to teachers, conceptual, logistical, educational, and attitudinal constraints impede the transition from belief to classroom reality (Jenkins, 2000). In high schools in the United States, teachers striving to integrate environmental topics report that their efforts conflict with rigid curriculum requirements (Moroye, 2009). To address this, teachers weave environmental issues into broader instructional themes such as ethics, integrity, and authenticity through vicarious learning methods like reflective writing, debates, and presentations (Moroye, 2009). Despite these strategies, teachers note practical challenges such as large class sizes, reduced

[1] Ecologically mindedness is defined as 'a viable means of integrating EE in a variety of forms of education' (Moroye & Ingman, 2013, p. 590)

funding, and insufficient resources that limit opportunities for outdoor education (Christie et al., 2025). They also point out that extracurricular environmental activities often go unfulfilled because of restricted budgets, time constraints, and a lack of support (Ward et al., 2025).

The challenges of teaching about the environment, which can lead to a belief–practice discrepancy, are examined broadly in the next section.

2.5. Relationship between teachers' beliefs and practice

The interconnection between teachers' beliefs and actions has been one of the most discussed themes in studying teachers' beliefs (Pajares, 1992; Richardson, 1996) because "what teachers know, think and believe directly affects classroom content and pedagogy" (Evans et al., 2012, p. 4). Referring to Brickhouse (1987) Seung et al. (2011) state that "what a teacher actually does in the classroom is a representation of what he or she believes" (p. 703) which highlights a close relationship between teachers' beliefs and practices.

Two main themes seem to lead the conversation: 1) congruence/incongruence between teachers' practice and beliefs and 2) reasons behind the inconsistency between belief and practice. There is also a controversy in terms of what shapes a teacher's practice, while some researchers indicate that it is beliefs, others advocate for knowledge as the basis for action. Fives & Buehl (2012) and Skott (2015) note the reciprocal nature of belief and action – beliefs cause actions and actions can result in a belief change, while Fenstermarcher (1994) argues that knowledge drives action – "our knowing is our action" (p. 11) (refer to 2.1.2. regarding the belief-knowledge discussion in academic literature).

2.5.1. Congruence/incongruence between teachers' practice and beliefs

There has been a longstanding debate around the question of how teachers' beliefs and practices are related and if one influences the other. Researchers three decades ago (e.g. Richardson, 1996), as well as now (e.g. Nation & Feldman, 2021) claim that teachers' beliefs are not always reflected in their classroom actions. There are many reasons expressed in the literature as to why beliefs and practices may not be congruent. For example, Richardson (1996) looking at preservice teachers found that they lacked the practical knowledge to implement their beliefs: "The complications in preservice teacher education are the lack of practical knowledge on the part of the students and the difficulty, if not impossibility, in helping students tie their beliefs to teaching practices" (p. 25). The author goes on to argue that practical knowledge is of great importance and the beliefs of the teachers with profound knowledge and experience overlap with their classroom practice. The existing literature about teachers' classroom practice also indicates curriculum or administrative tasks, as well as schools' available supplies as factors to prevent teachers from realising their beliefs during the teaching process (Lederman & Zeidler, 1986).

Rejecting the idea that the main focus of research should be teachers' practice but not beliefs due to incongruence between teachers' practice and beliefs, Fives & Buehl (2012) claim

that if we want a change in teachers' practice we have to look at the ways of changing teachers' beliefs. Though experiences or teacher training programs may lead to changes in teachers' beliefs, changes in one's beliefs do not absolutely mean changes in one's practice (Richardson, 1996).

2.5.2. Teachers' beliefs and practice in environmental education

Incompatibility between teachers' beliefs and practice has been observed within environmental education as well. The research conducted among high school teachers in Kosova by Spahiu et al. (2014) revealed that, although the teachers believed in the importance of learning about global warming and the loss of biodiversity placing them among high-priority environmental issues in written questionnaires, during the interviews, they stated that due to the insufficiency of relevant literature, IT equipment and time constraints, they were unable to put their ideas into practice. Besides, the majority of teachers preferred the classic teacher-centred approach, while only a few teachers included elements of the transformative approach such as process-oriented, participatory, and action-oriented learning. Teachers found outdoor teaching and fieldwork useful for developing students' critical thinking and practical skills, engaging with the nearby school area as an outdoor learning space, and fostering a student-led teaching environment, though they could address them from time to time due to obstacles such as big classes and time constraints (Spahiu et al., 2014). These findings are very much in line with the findings of Ko & Lee (2003), who through an exploratory study investigated Hong Kong secondary school science teachers' perception of environmental education. Although most teachers believed in the importance of education in the environment, only slightly more than 27 per cent of teachers reported the use of field trips and outdoor activities during their classes. Teachers put more emphasis on environmental knowledge rather than attitudes or skills that clearly defined their teacher-centered teaching style which was different from their self-reported practice. The research results show class size, class time and syllabus content to be one of the most important barriers to teaching environmental issues.

Despite a decade of difference between these two studies, it is interesting to note that challenges and barriers seem to remain the same in incorporating environmental education into classroom teaching.

Exploring the approach to ESD (Witoszek, 2018) in three contrasting societies – Norway, China and Ghana revealed different reasons that established a gap between theory and practice. ESD in Norway, China, and Ghana faces similar challenges but also shows some differences. In all three countries, schools struggle to balance economic growth with protecting the environment, and students are often more attracted to stories of wealth and success than to lessons about conservation. Teachers are not always trained to teach sustainability in a connected, interdisciplinary way. In Norway, environmental education has decreased and been replaced by social topics, though local stories and folktales could help make sustainability more interesting. In China, some efforts to raise environmental awareness exist, but they are often outweighed by development pressures. In Ghana, there is more focus on using local

ecological knowledge, though teaching across subjects is still limited. Teachers in all three countries reported a lack of time. In Norway, they focused on achieving higher PISA scores; in China, the priority was preparing students for the demanding university entrance exams; and in Ghana, teachers struggled to teach sustainability because following the ESD guidelines was time-consuming since policies were unclear.

Teachers' beliefs can be prevented from being enacted by the complex nature of environmental issues, the current political climate, and pressure from parents and administration (Nation & Feldman, 2021). Evans et al., (2012) note policy and practical support, school and local community preferences, and expectations among the barriers to teaching about the environment.

As it can be seen from the reviewed literature the main barriers in teaching about the environment seem the be similar across the countries. Some listed problems require a top-down approach, while others can be prevented by teachers as they are associated with the constructivist teaching approach. Research findings show that teachers' beliefs can change from traditional teacher-centred beliefs to constructivist student-centred beliefs after successfully planned pre-service programs, but as a first step teachers' existing beliefs should be identified and the program should be adjusted so that it can result in changes in the nature of teachers' beliefs (Seung et al., 2011).

2.6. Research questions

Given the importance of education and the central role of teachers in addressing environmental problems, the focus of my research is to critically examine teachers' beliefs about the environment and the relationship between their beliefs and their classroom practices, asking:

1. What are secondary school teachers' beliefs about the environment in Azerbaijan?
2. In what ways are teachers' beliefs about the environment enacted in their classroom practice?
3. What are secondary school teachers' beliefs regarding teaching about the environment in Azerbaijan?
4. In what ways are teachers' beliefs regarding teaching about the environment enacted in their classroom practice?

2.7. Conclusion

In this chapter, I have attempted to critically review the literature on beliefs in general, teachers' beliefs, teachers' beliefs about the environment and how teachers' beliefs are related to their classroom instructions. The main points that emerged from this discussion are:

- There is a profusion of terms and definitions related to belief;
- Beliefs and knowledge are different in terms of being subjective/objective, static/dynamic, and possessing/not possessing emotional background;

- The term I use within the scope of my study is belief and the working definition I employ is belief is a mental state that reflects an individual's inner world to interpret the realities/nonrealities of the world that can stem from personal judgment;
- Literature reports teachers having a wide range of beliefs about the environment in different countries (anthropocentric, ecocentric, guardianship, naturalistic, etc);
- Anthropocentrism does not always carry a negative connotation, as it reflects the inherent human way of thinking - inevitably, we perceive and interpret the world through a human-centred lens;
- A range of factors, including socio-economic background, teachers' past school experiences, and the content of their teaching, influence their beliefs and approaches to teaching about the environment;
- A general pattern that leads the discussion about teachers' beliefs is congruence/incongruence between teachers' beliefs and practice.

Furthermore, as discussed in 2.3 and 2.4, though there is a range of research on teachers' beliefs, their impact on classroom instruction has not been awarded much attention. Besides, teachers' beliefs about the environment is under-researched in Azerbaijan and there is almost no literature capturing what their beliefs are regarding the environment and teaching about the environment and how they bring their beliefs into the classroom.

Taking account of all these research gaps, this study is set to explore: 1) secondary school teachers' beliefs in Azerbaijan about the environment and teaching about the environment and 2) their enactment in their classroom practices.

In the following chapter, I explain how I set about exploring research questions proposed describing my choice of research methods and organisation of my research.

Chapter 3. Methodology

3.1. Introduction

In this chapter, to answer my research questions that are related to teachers' environmental beliefs and practice, I provide an overview of the methodology and study design to state how this research about teachers' beliefs and practice was organised and developed, as well as present justification for the use of the methodology and methods that will be employed while exploring teachers' beliefs about the environment and teaching about the environment.

At the outset, my ontological constructivist and epistemological subjectivist positions are detailed (3.2). The chapter then goes on to examine the research design (3.3) and the research approach (3.4) where I rationalise my choice of qualitative case study approach. The pilot study, which I discuss in section 3.5, was an important phase of my study that helped me revise my research questions, shifting the focus of my study from a comparative (UK-Azerbaijan) to a single-country (Azerbaijan) study. The pilot study also helped to refine my interview questions. In section 3.6. I address the research site – Black City which has a long history of being a hub for oil production and thus being one of the most polluted areas of Azerbaijan. The section also discusses the challenges of gaining access to schools and the process of recruiting five general secondary school geography teachers from three schools located in Black City. In the following section (3.7.) I describe my data collection methods which entail a series of background, recall, final interviews and observations and explain how I used the data in my study. I also justify using the data in its original language while avoiding translation. My positionality - how being both an insider and outsider simultaneously could impact my data analysis - is highlighted in section 3.8. Next, I discuss my data analysis approach in 3.9 explaining my rationale for using case study analysis to analyse the individual cases and thematic analysis for cross-case analysis. I also provide an overview of the themes emerging from the data analysis. Trustworthiness and ethical issues related to this qualitative research are discussed in sections 3.10 and 3.11. respectively.

Within my study, I select individual teachers as my main unit of analysis. Since teachers are inseparable from the context they are teaching, I do not deny the influence of school context on teachers' beliefs, and it is a part of my research project, though I am not focusing significantly on the school context. So, although the study is not entirely an ethnographic case study, it entails some characteristic features as teachers operate within their school context.

3.2. Ontological and epistemological positions

Before making explicit how I designed my research project, I think it is important to display the philosophical underpinnings of my study that are connected with the nature of social reality – ontology - and knowledge production process - epistemology. My philosophical position is nested within the perspectives of interpretivism that take subjectivist epistemology

and constructivist ontology positions since it assumes that a social phenomenon is continuously constructed by individual actors (Fryer, 2020) and the inquirer's responsibility is to identify how meanings are reflected in social actors' language and actions (Schwandt, 1998). The social world consists of our interpretations which means there is no universal law but the reality that depends on "subjective meanings" and "to understand other people, therefore, requires understanding the interpretations which they give of what they are doing" (Pring, 2000, p. 98). This is directly connected to the purposes of my study as my research focus is exploring teachers through the analysis of belief structures. I interpret how my teacher respondents establish their realities about the environment and how they are reflected in their practice since "meanings used by participants to interpret situations are culture- and context-bound, and there are multiple realities, not single truths in interpreting a situation" (Cohen et al., 2018, p. 288) which refers to the ontological perspective of mine and how the knowledge is co-created by engaging with teacher respondents that relate to the epistemological position. Bryman (2012) notes "double interpretation" which is "interpretation of others' interpretation" and further adds the third level of interpretation which he states interpretation of the research in terms of "the concepts, theories, and literature". So within the framework of triple interpretation, I try to interpret teachers' interpretation of social reality with the aim to establish socially constructed knowledge which is further interpreted within the established framework of the discipline.

As key components of research - ontology, epistemology, and methodology are closely related to one another and my philosophical position leads me to choose qualitative research design that I am going to discuss in the next section.

3.3. Research Design: Qualitative Research

3.3.1. Defining Qualitative Research

In this section, I aim to explain why I selected qualitative research design and how I define qualitative research within the limits of my study as I proceed to explore secondary school teachers' beliefs about the environment in Azerbaijan and how teachers' beliefs about the environment are enacted in their classroom practice.

Qualitative research is concerned with investigating social phenomena that are "outcomes of the interactions between individuals" (Bryman, 2012, p. 380). There is no one way to determine these interactions. This is supported by the ontology of qualitative research that stresses the existence of multiple realities as "people, situations, events and objects are different" which is an object to multiple interpretations (Cohen et al., 2018, p. 288). Since social reality "is more messy, more convoluted and more surprising" (Gherardi & Turner, 2002, p. 84) than we often expect, it is difficult to define qualitative research due to "a complex, interconnected family of terms, concepts, and assumptions surrounds the term" (Denzin & Lincoln, 2011, p. 3). In a similar way, referring to qualitative research as "an umbrella term"

embracing different methodological approaches, Punch & Oancea (2014) note that “the field of qualitative research is complex, changing and contested – a site of multiple methodologies and research practices" (p. 144). My interpretivist position is echoed by Denzin & Lincoln (2011):

> Qualitative research is a situated activity that locates the observer in the world. Qualitative research consists of a set of interpretive, material practices that make the world visible. These practices transform the world. They turn the world into a series of representations, including field notes, interviews, conversations, photographs, recordings, and memos to the self. At this level, qualitative research involves an interpretive, naturalistic approach to the world. This means that qualitative researchers study things in their natural settings, attempting to make sense of or interpret phenomena in terms of the meanings people bring to them. (p. 3)

This definition of qualitative research resonates with the aims of this study since I want to explore the notion of beliefs and practice in the context of environmental education in a real-life setting using naturalistic methods of data collection through the interpretation of teachers’ interpretation of the phenomenon under study.

3.3.2. The rationale for qualitative research

The characteristic features of qualitative study allow me to consider it for the purposes of this study. The epistemological position that reality is established through interpretation but not scientific inquiry (Bryman, 2012) where the role of “empathetic understanding” (Miles & Huberman, 1994) and the value of a rich description (Denzin & Lincoln, 2007) is taken into consideration as I attempt to delve into the thinking and beliefs of teachers. As I am exploring a phenomenon to be captured in a real-life setting, I have addressed qualitative research as it is considered one of the main features of qualitative research to explore “naturally occurring, ordinary events in natural settings, so that we have a strong handle on what ‘real life’ is like” (Miles & Huberman, 1994, p. 10).

Another recurring point in qualitative research design is related to the ontological position that adopts the emic perspective. Emic and etic approaches are sometimes considered a major difference between qualitative and quantitative research (Cohen et al., 2018) since the emic position allows the researcher to view social life in action focusing on the peculiarities of particular cases (Denzin & Lincoln, 2011) while the etic position focuses on probabilities and randomisation that is out of the boundaries of everyday life (Newman & Hitchcock, 2011). Since “qualitative researchers deploy a wide range of interconnected interpretive practices, hoping always to get a better understanding of the subject matter at hand” (Denzin & Lincoln, 2011, p. 4), it allows me to directly be in touch with my teacher respondents, to elicit their thoughts about the environment and environmental education, to observe them during in-class and out-of-class teaching and to examine the congruence/incongruence between their beliefs and practice within a real context.

3.4. Research Approach: A case study

3.4.1. Definition of case study

Considering the research questions that embrace this research project and my philosophical stance that supports the interpretivist paradigm asserting there is no single reality and the truth emerges by engaging in continuous dialogue with research participants, I will refer to the conceptualisation of the case study presented above Cohen et al. (2018) in the sense that I am using the term in this study since while exploring teachers' beliefs about the environment and environmental education, I acknowledge that there is more than one reality and the research process is characterised by double interpretation - my interpretation of teachers' beliefs will be based on teachers' own interpretation of their beliefs:

> A key feature of a case study is its rejection of a single reality; rather, there are multiple, multivalent realities operating in a situation, and the researcher's view and interpretation is only one of many. Indeed the researcher has a duty to address reflexivity and to address or report others', for example, participants' views on the case in question. (p. 377)

Another point I would like to stress that makes it complex to define the case study is the complexity related to identifying the case and its boundaries (Cohen et al., 2018; Hitchcock & Hughes, 1995; Merriam, 1998). It has been suggested that inquirers must be clear about "what constitutes the 'case', and what are their boundaries in case study research" (Cohen et al., 2018, p. 376) and identify "key players" and "key situations" to make sure "where the case ends or should begin"(Hitchcock & Hughes, 1995, p. 319). Considering the nature of my study and my research questions, I refer to the teachers as different cases employing multiple case study with five teachers involved, taking each teacher as a unique case within my research, which allows me to have in-depth examination and comparison.

The unit of analysis is identified by the research questions, if there is difficulty in defining the unit of the research, the reason can be the research questions are "either too vague or too numerous" which can pose difficulties in conducting the research (Yin, 2003). Referring to the research questions of this study, the boundaries of my main unit are constrained by individual teachers. I have taken individual teachers as my unit of analysis because I agree with the idea that the way teachers think will probably impact how they act in the classroom which will directly influence their students' perception of certain phenomena (Lederman & Zeidler, 1986). In light of this, within my study, I took individual teachers as my unit of analysis each representing a separate case, thinking teachers prepare the younger generation to take care of our planet and instil them with values to consider in their daily life and to make effective decisions in future. Besides, teachers being a unit of analysis is related to the gap in the literature as to how teachers' beliefs are related to their classroom instructions within the environmental context, as well as teachers' beliefs about the environment in Azerbaijan have not been well researched. The aforementioned points present a point of departure for taking teachers as my unit of analysis.

In the next subsection, I put forward my rationale for choosing a case study approach for my research project.

3.4.2. Rationale for choosing a case study

A case study is a useful tool to explore a particular unit within its natural context through in-depth exploration. From this point of view, a case study gives an opportunity to have an "example of real people in real situations" (Cohen et al., 2018) and capture "in-depth subjective understandings of people" (Hitchcock & Hughes, 1995) that help to get a clear understanding of the "complex social phenomena" under study (Yin, 2003). With this in mind, I have several reasons for choosing a case study as appropriate for my study.

First, a case study creates an opportunity to investigate a social phenomenon – teachers' beliefs about the environment and environmental education in its natural context – at schools or as Gharardi and Tumer state (2002), "the case study is a research strategy which focuses on understanding the dynamics present within single settings" (p. 4). A case study is employed when the researcher examines current events, has no intention to control the behaviour of participants, can directly observe the events, and has an interview with the respondents (Yin, 2003). These steps of a case study overlap with my research approach that has been adopted to explore the research questions of my study where I am going to examine contemporary events to search for the answer on what the teachers' currently existing beliefs about the environment are, interview and observe teachers' practice in a natural setting without trying to manipulate their behaviour.

Second, where the researcher has limited control over the situation, the context is an important factor in observing how or why a certain phenomenon happened in a given situation (Cohen et al., 2018; Hitchcock & Hughes, 1995; Yin, 2003). Being a preferred strategy to explore contextual factors, I have employed a multiple case study design to observe the beliefs and practices of five geography teachers and analyse context-bound similarities/differences that are relevant to my study - teachers' beliefs about the environment and environmental education in Azerbaijan.

3.5. Pilot Study

A pilot study is a useful step in a way to detect whether the research methods and procedure work as intended. It helped me to refine and develop data collection procedures answer the questions and clarify certain points that were obscure to me (Yin, 2003) and train myself as a researcher and improve my interviewing skills.

I conducted the pilot study with four in-service teachers in Azerbaijan face to face and two preservice teachers in the UK online. I had limited access to the schools due to the COVID-19 pandemic and I have decided to conduct my pilot interview with four teachers of the same school where I was located (in Azerbaijan) during that time as the researcher can decide

to undertake a pilot study in a school that is accessible or geographically convenient (Yin, 2003).

Based on my experience in the pilot study, as well as the problems encountered during the pilot study, I have made several decisions:

- The major decision I made based on my pilot study is I shifted from doing a comparative study to exploring the beliefs of the teachers of Azerbaijan only. Initially, thinking the findings emerging from the research could help my country to benefit from an experience of a country with a long-standing environmental education tradition at schools with a focus on developing teachers' environmental thinking, I intended to do a comparative study. However, after conducting the pilot study, I realised the challenges of undertaking a comparative study during the COVID-19 pandemic. Given the need to conduct interviews and observe classes, travelling and gaining access to schools would be particularly difficult and time-consuming in two different countries. Moreover, the results of the pilot study showed teachers have a deep understanding of environmental issues and environmental education, are concerned about environmental problems and are willing to share their experience hoping that it may make changes in teacher training programs in the future.

  Another reason for exploring the beliefs of teachers only of my hometown is during the pilot study, I sensed there could be cultural messages that I may have difficulties interpreting as I had not had any chance to live in the UK, share my thoughts and discuss beliefs about the environment with alike minded people due to COVID-19 pandemic.
- Initially, I intended to investigate Life Skills Subjects/Integrated Science teachers' beliefs about the environment noting the interdisciplinary nature of environmental education. During the pilot study, I had an interview with four teachers of Life Skills Subject (in Azerbaijan). The main subject of the two teachers was Biology and two of them were teaching Geography. During the interviews, I observed teachers mainly talking about how they teach Biology/Geography rather than focusing on the interdisciplinary nature of the subject. Also, taking into consideration the academic hours that Life Skills subject are taught (only once a week in each class) and noting teachers are more focused on teaching their own subject rather than Life Skills, I decided to interview only Geography teachers for my main study.
- After testing my interview questions during the pilot study, I updated some of my interview questions and divided them into three broad categories: 1. Teachers' general beliefs about the environment; 2. Teachers' anthropocentric/ecocentric beliefs about the environment; 3. Teachers' beliefs about teaching about the environment and environmental issues. I sequenced them in a way that appeared logical during pilot interviewing.

- During the pilot study, I sensed some of the questions were difficult for the teachers to understand. For example, “How do you feel about teaching the contested nature of environment/environmental problems?” or “Do you agree with the idea that the balance of nature is strong enough to cope with the impacts of modern industrial nations or it is delicate and easily upset? Why?” seemed abstract and teachers asked for clarification on exactly what I meant. So, I gave some preliminary information about what I am going to ask in my updated interview schedule.
- It is important to have a good rapport with the teachers who are the participants of the study. In Azerbaijan, I had a face-to-face interview with teachers though initially, I intended to have an online interview. However, I had a short talk with teachers before the interview over the phone and it seemed teachers were not willing to talk much as they had never seen or heard about me. And I decided to have a face-to-face interview, arrived at the school a bit earlier, introduced myself, had a chat with teachers about my study. One teacher mentioned that if they had an online interview, she would not be so open and comfortable to talk to me.

  Building a rapport is important to make it clear to teachers that participation in a pilot study is voluntary as one teacher said that she does not have much time as the school principal asked her to take part. Based on this experience, I decided to meet teachers of my main study several times before commencing the interviews, to build a good rapport, and identify teachers who are participating in the study for their own interest but not for some other reasons.

3.6. Research site and the participants

I have recruited my participants via purposive sampling as my research aims to be explored within the rules of a qualitative case study that investigates a particular case within the natural context – i.e. teachers’ beliefs about the environment in selected schools of Azerbaijan. Referring to the research questions being asked, the research entails purposive sampling on two levels: sampling of context/cases and sampling of participants (Bryman, 2012). Before moving on to sampling on context and participant level, in section 3.6.1, I provide information about the research location – the area where research was conducted, its history and socio-demographic situation and my rationale for conducting the research in that area.

3.6.1. Research area – Black City

The discovery of oil sites in Baku, the capital city of the Republic of Azerbaijan in mid 19th century, signifies the establishment of the petroleum industry in Azerbaijan. In 1846 the very first oil well in the world was drilled in Baku (Mir-Babayev, 2008). At the beginning of the 20th century, the Baku oil field was the largest in the world (Britannica, 2025).

The development of the oil industry resulted in many plants and refiners being built in Baku. Baku oil attracted foreign investors, and several established their ties with Baku including big investors such as Nobel Brothers and Rothschild brothers.

Starting their oil industry in Baku since 1875, in 1878, Nobel Brothers built the first pipeline that delivered oil from Balakhani oil wells to “Black City” refiners. Already in 1879, Nobel Brothers established Branobel Petroleum Production Company which mainly operated in Baku and controlled more than 75% of Baku oil[1] (Asbrink, 2002). In 1883 the famous Rothschild brothers established a new company in Baku and bought 135 minor and middle enterprises within a short period (Mir-Babayev, 2008).

The ‘Oil Boom’ of the 1870s and the reputation of Baku as an oil capital of the world brought a lot of challenges, especially related to the pollution of the environment. In order to decrease the growing dissatisfaction of people against pollution, the agreement was made to move all oil industry to unpopulated suburbs and most of the refiners were replaced in urban areas, including Keshla (the area where two of the schools in my study are located) (Фатуллаев, 1978). As a result, oil plants were removed to the south-eastern part of Baku, which was soon called “Black City” due to the black smoke, smog and soot that covered that part of the city (ibid.). The historian F.Akhundov (1994) writes:

> Within a very short time, a new industrial suburb grew up centering around the Nobel-owned refineries. At that time, the view of chimneys and pipes was a symbol of progress and mankind's achievements. No one was concerned about environment and ecology… Even when you go to "Black City" today, the thick odor of black oil hangs in the air. Sometimes it's so strong you can taste it. (p. 10)

The extent of living conditions of the Black City due to polluted ecology was getting worse and engineers and top-level employees rejected working in the area despite the high salaries offered to them (Akhundov, 1994). In an attempt to improve the situation Nobel Brothers even established a park in Black City by bringing fertile soil, various plants and trees from other regions of Azerbaijan and from different countries, to create an opportunity for their employees to “breath” and relax (Mir-Babayev, 2008). The Branobel History website of Sweden writes:

> By implementing Western standards and taking into consideration the employees’ health, Branobel aimed to improve conditions in the very tough environment around the oil fields. The plan proved noble but difficult to realize. The natural conditions around the industrial region were very harsh. Alfred Nobel himself conceded that he never wanted to visit the Baku Oil fields given the depressing environment. (Ahanchi, 2011)

Though nearly 30 years passed from what the historian Akhundov noted, living conditions and the pollution of the environment now can be close to what was witnessed three decades ago. The only remarkable difference is population. During the 1970s, this area was mostly unpopulated, which was the main reason refiners were located in Black City. However, now the territory of Black City is divided between two districts of Baku city: 1. Nizami, which

[1] When the Nobel Prize was established in 1901, 12 percent of prize money was drawn from the Nobel Brothers' Petroleum Company in Baku (Asbrink, 2002).

includes 4 regions with one of them being Keshle village with more than 25000 residents (Azərbaycan Respublikasi Baki Şəhəri Nizami Rayon Icra Hakimiyyəti, n.d.); two of the schools I visited were located in Keshla. 2. Khatai, which mainly covers the White City part of Black City; one of the schools researched was located there.

Mainly people with low socioeconomic backgrounds populate the area. The part of Keshla is called ‘Shanghai’ by local people due to the resemblance of densely populated areas with railways running through the streets of Asia (Figure 9).

Figure 9. ‘Shanghai’ of Black City (fieldwork photo)

As the most polluted part of Azerbaijan and one of the most polluted areas of the world, I am set to explore teachers' beliefs about the environment in Black City. I believe teachers in this region have distinctive experiences and potential to give a particularly interesting insight into a setting that has been known for the degradation of the environment. Revealing teachers’ beliefs with first-hand experience of environmental problems can contribute to the effective implementation of environmental education and consequently lead students to take more responsibility for protecting the environment as teachers are one of the major actors of society to influence future generations’ minds and hearts to protect the environment.

3.6.2. Gaining access to schools

Gaining access to schools started with sending an official letter to the Ministry of Education of the Republic (MoE) of schools that was the gatekeeper in my case and their official authorisation I attained in the form of a letter. The second stage was to approach school

principals and show them the letter of MoE to ask their permission to conduct my research with the teachers' of their school. The later stages involved meeting deputy directors who introduced me to the teachers or meeting directly with teachers.

Gaining access to schools and recruiting participants was the most challenging part of my fieldwork. I struggled to find schools and teachers willing to participate in the project and had to revisit my initial plan and follow a flexible design approach. Considering a small sample size is inherent for a qualitative case study (Miles & Huberman, 1994) to conduct manageable research, the study was initially intended to be conducted within two schools in Azerbaijan. Another reason was, to make good use of my invaluable limited time as I thought spending much time at one and the same school could interfere with teachers' usual routine.

The first challenge I encountered was a letter from the MoE that led the school principals to believe that I was an inspector sent above to assess or measure something related to the school or teachers and I had negative responses in a few schools. Another challenge I had, in most cases, despite introducing myself as a doctorate student, it was difficult for school principals and teachers to capture my position as we do not have the "tradition" of having doctoral students at the schools. In all the schools I visited, I was the first doctoral student intending to involve the school and teachers in the research project. It is common for our schools to have master's students for their internship during their last year of study. As a result, my position at the schools was always misunderstood as an intern student.

Another challenge was getting teachers' agreement to participate in the study. Despite the difficulties in recruiting participants, I rejected the idea of using snowballing as it would not be specifically from the area where I aimed to recruit my participants for my research. My intention was strictly to conduct my research in one of the most polluted areas of our country – Black City, and I had unsuccessfully visited 14 schools more than 20 times. Though it might be important to report the details of refusals (Breakwell, 2012), I did not have a chance to get to know all of them. The common reasons for rejection in most schools stated by school principals were that they were unable to accept researchers in their schools due to lack of staff, lack of time or staff illness. Some school principals had positive responses however suggested paying another visit to the school after a few days due to the workload of the principal and teachers which in some cases, resulted in visiting one and the same school several times but still without success. Audio-recording was another reason for refusal as I could sense teachers' decision was firm not to participate after I informed them about audio-recording.

In some cases, I had an agreement with school principals, I had a chance to meet with teachers, and they seemed willing to participate. However, during my next visit to the school and after further discussions, the teachers rejected their participation. I had a case with one teacher where I finished the semi-structured interview phase with the teacher, we tried to arrange a meeting for the observations, I visited the school several times, but every time the teacher forgot our meeting and had to postpone the meeting due to some work duties. After several unsuccessful attempts to observe the teacher's classes, we scheduled another

meeting. I arrived at the school at the agreed time, only to find the teacher in the corridor, explaining that she was on duty that day to accompany students to an event. Interpreting this repeated pattern as a sign of the teacher's reluctance to participate in the study, I decided to discontinue data collection with this teacher.

In one school, I met with the school principal. She seemed very enthusiastic about having a doctoral student at their school to set a good example for the students and invited a geography teacher who also seemed willing to participate. However, later I got to know he was a male teacher and the only geography teacher in the Azerbaijani sector at that school (there was another teacher teaching in the Russian sector, but I was recruiting teachers only from the Azerbaijani sector to avoid further challenges that may be encountered by using multiple languages). That would raise cultural issues and make it challenging for me to build rapport as it is not polite for women in my country to chat with a man in informal settings. So, I had to reject his participation politely by explaining how it would affect my position at school (I had another male participant in my research; however, I had another female teacher from that same school that made it easier for me to communicate when there were three of us).

After extended visits to schools, I was able to recruit five teachers from three different schools. Three of them agreed to take part during our first meeting, while two of them were from the same school who initially refused. As there were three geography teachers at that school, I had higher chances to involve one or two of them in my research and that would have saved me time, I paid a few visits to that same school. I had to build rapport with the teacher who refused before including them in my participants list and I was able to recruit two teachers from that school. The details of building rapport with teachers will be broadly presented in section 3.8.

3.6.3. Secondary schools

The criteria for choosing schools were: 1) they had to be secondary schools; 2) schools that were willing to contribute to research findings; 3) schools that were accessible when I started my main study and ready to take part in the research; 4) schools that were located in Black City.

The first meeting was with the school principals after introducing them the letter from the MoE. The principals welcomed me to their schools and except in one school where I was directly introduced to the teachers, in the other two schools I was introduced to the deputy school principals who assisted me in meeting teachers (The schools will be referred to as A, B and C throughout the research).

Schools A and C had an average of 1000, and school B had 1300 learners per school year. All the schools were either newly built or rebuilt recently (2012, 2014, and 2018 respectively). However, schools A and B's general circumstances and infrastructure were low. School C had a more developed and modern school building. Besides, there were bird nests in the trees in the garden of school C made by students (Figure 10).

Figure 10. A bird nest made by students and placed in a tree in the garden of School C.

Corridors, entrance hall and waiting area in front of the school principal's office (Figure 11) were full of natural flower pots that brought a relaxing atmosphere to the school.

Figure 11. In front of the school principal's office at School C

The low school equipment within the classes was observed in all schools. Schools A and B were located in the most polluted part of Black City, where oil tanks were visible at a short distance from schools and odours from oil tanks were felt within the schools (Figure 12). School C was close to the recently established White City part of Black City.

Figure 12. The view of oil tanks taken from the window of school B. The first picture was taken in early March, the second picture was taken in late May.

There were nearly no green areas around the schools (one of the teachers said there were many trees around school A, but they were cut down when the new school building attached to the old one was built in 2005 and 2007). Having seen the view from school B in two different pictures taken within a month's gap (Figure 12), it was interesting to see how the view has changed throughout this period and how the green trees changed the gloomy schoolyard.

School A had three, schools B and C had two geography teachers, all teaching in the Azerbaijani sector.

3.6.4. Teacher participants

I recruited five geography teachers from three schools in Black City. I added the details of teachers' beliefs in Table 8, and the teachers' names were pseudonymised. The main criteria for inclusion of participants were: 1) my research questions that entail including teachers of secondary schools; 2) geography teachers; the number of topics related to environmental issues in the geography subject curricula was more than any other subject; that presented greater opportunities for exploring my case compared to other subjects; 3) in-service geography teachers to make it possible for me to observe them during classes; 4) teachers that are teaching in Azerbaijani sector to avoid language issues; 5) teachers that are "hospitable", ready to share more and willing to contribute to the research process (Bryman, 2012).

Teachers (Pseudonyms)	School/ one or two shifts	Gender	Age	Subject/s they teach	Classes observed	Years of experience
Jamila	A/two shifts	female	54	Geography/ Life Skills	Geography/ Life Skills	17
Zeynab	A/two shifts	female	32	Geography/ Life Skills	Geography	4
Fariz	B/one shift	male	36	Geography/ Life Skills/ STEAM	Geography	13
Asli	B/one shift	female	26	Geography/ Life Skills/ STEAM	Geography/ Life Skills	2
Mehri	C/one shift	female	60	Geography/ Life Skills	Geography	31

Table *8*. Participant information summary

The participants will be presented in the "Findings" chapter, here, I present brief information about each of them:

Jamila – Though her parents wanted her to become a doctor, she applied to become a Geography teacher without informing them. She was accepted into the Faculty of Geography and graduated with distinction. She started to teach geography right after graduating from the university. Before coming to the school in the Keshla region, she worked in the Kurdamir region, the village where she was born. She has been teaching geography for nearly 17 years and Life Skills for a few years now at the school where she was employed teaching at the time of research. She is one of the few teachers at the school to have the highest scores during teachers' diagnostic assessment exams (58/60). She was teaching on two shifts, most of them were morning classes and two classes in the afternoon session. Her teaching load was 22 hours a week with one 6th grade (6A, 2h/w), two 7th grade (7A, 7B, 4h/w), four 8th grade (8A, 8B, 8Ç, 8D, 8h/w), one 10th grade (3h/w) and one 11th grade (4h/w). Broader information about Jamila's beliefs about the environment is provided in Chapter 4.

Zeynab – despite her interest in painting and initial plan of becoming an artist, Zeynab chose to become a geography teacher, which stemmed from the love of her own geography teacher. She graduated from Azerbaijan Teachers' University in 2008-2012, the faculty of history and geography. She started her teaching career in the 2017/2018 academic year in the Gusar region of Azerbaijan. During teacher recruitment exams in 2018, she scored 54 (out of 60) and was relocated to the school she was teaching at the time of research. She has been teaching at that school since then. As Jamila, she was also teaching on two shifts, majority of classes being morning classes. The teaching load she had was two 6th grade (6B, 6D, 4h/w), three 7th grade (7C, 7Ç, 7D, 6h/w) and one 9th grade (9B,2h/w), which made up an overall 12

hours[1] a week. Broader information about Zeynab's beliefs about the environment is provided in Chapter 8.

Fariz – After graduating from the Azerbaijan State Pedagogical University and completing his military service, Fariz embarked on his teaching career in one of the remote villages of Azerbaijan, Guba. After working there for three years, he came to the Keshla (Black City) school in 2013 by taking the teacher recruitment exam, where he had 34 points out of 35[2]. He had been teaching there since then. He also worked in a private tutoring education centre between 2010-2020. He was the author of several books related to learning geography. He was working four days a week (except Tuesdays) with 24 hours workload teaching mainly geography and a few life skills and STEAM classes. He had all the 10th and 11th graders and most of the 9th graders since he was more experienced than the other geography teacher – Asli, who started her teaching career in September 2020. Broader information about Fariz's beliefs about the environment is provided in Chapter 5.

Asli – graduating from the university as a geographer Asli later decided to become a geography teacher and had to attend a teacher professional development course[3] for ten months to change her profession. Due to the pandemic, her first year of teaching was online, and she returned to school in September 2021. She was one of the two geography teachers at the school. She was at the school every day except Thursdays when she did not have any classes. She had four 5th grade (5a, 5c, 5d, 5ç, 1h/w), two 6th grade (6a, 6c, 2h/w), four 7th grade (7a, 7b, 7c, 7ç, 2h/w), three eighth grade (8a, 8b, 8c, 2h/w), one 9th grade (9c, 2h/w) – making 24 hours a week in total. Broader information about Asli's beliefs about the environment is provided in Chapter 7.

Mehri - was a geography and biology teacher. She was one of the active teachers whose students extensively participated in olympiads. She had many articles published in

[1] Zeynab had fewer teaching hours than Jamila who worked at the same school at the time of this research. The reason for this, new vacancies may arise when new classes are opened. According to the Decision of the Cabinet of Ministers No. 212 of the Republic of Azerbaijan (2020), the minimum number of students in each class must be 20. A class can accommodate up to 39 students, depending on available classroom space. When a class reaches 40 students, it is divided into two classes. A class can be divided into two when it has 31 or more students only at the time of the first conversion from a single class to two classes. For example, if the first split creates two classes with 15 and 16 students each, any subsequent division of these classes should occur only when a class reaches 40 or more students. In remote areas, schools with fewer than 20 students in a grade are allowed to open a class.
When new classes are opened, new teaching hours become available, which can be filled in two ways: at the end of the academic year, a certain number of hours are announced as vacant for the coming year, and new teachers may apply through the central examination; if the vacancy arises during the academic year, Regional Education Departments can internally recruit temporary teachers to cover the remaining hours until the end of the year. The same teacher, as well as others, can later apply through the central examination for the same number of hours for the same vacancy.
Because Zeynab had fewer teaching hours, she was not required to be at school during periods when she was not teaching or performing work-related tasks. Teachers are free to complete their paperwork at school or at home, so there is no obligation to remain at school beyond their assigned teaching hours.

[2] During the early years of presenting teacher recruitment exams the number of questions presented to teacher candidates was 35. After 2014, the number of questions increased becoming 60 questions.

[3] Teacher Professional Development Courses were established by the decree of the Cabinet of Ministers in 2010 and were based in higher education institutions. In 2020 the courses were postponed until an unknown period. The latest updates are to be announced by the MoSE.

various journals about the challenges of being a teacher, the importance of pedagogical content knowledge, teaching geography and teacher preparation. She held the position of head of the academic committee at her school and later served as the leader of a youth science club focused on nurturing future scientists, organised under the local education department. She was also a recipient of a prestigious national award recognising excellence in teaching. The workload Mehri had was 12 hours a week teaching 6th, 7th, 9th, 10th and 11th graders, as well as one 7th grade for the students with hearing and speaking difficulties. Broader information about Mehri's beliefs about the environment is provided in Chapter 6.

3.7. Data Collection

I was in the field for 18 weeks (from the 21st of February 2022 until the 20th of June 2022) (Table 9). Face-to-face meetings with teachers lasted over 18 weeks. I managed to have final interviews with teachers before the school closure for three months for summer break.

Phase	Research questions	Method	Purpose	Timeline
Phase 1	RQ1 and RQ3. What are secondary school teachers' beliefs about the environment and teaching about the environment in Azerbaijan?	Semi-structured interviews	To explore teachers' stated environmental beliefs	February-March
Phase 2	RQ2 and RQ4. In what ways are teachers' beliefs about the environment and environmental education enacted in their classroom practice?	Classroom observations Post observation interviews	To explore teachers' actual environmental beliefs, to have an initial analysis of compatibility between teachers' stated and observed environmental beliefs	April-May
Phase 3	RQ1 and RQ3. What are secondary school teachers' beliefs about the environment and environmental education in Azerbaijan? RQ2 and RQ4. In what ways are teachers' beliefs about the environment and environmental education enacted in their classroom practice?	Final interviews	To elicit teachers' final thoughts, to ask the questions that were not asked during previous interviews	May-June

Table 9. Data collection schedule

I had five teachers in my study and considering teachers' timetables, I divided my weekdays one for each teacher so that I would spend my whole day at one school. As a result, I had to visit schools A and B each twice a week as I had two teacher participants from those schools and school C once a week. However, my school visiting schedule was flexible. When the teacher was off the particular school due to some unexpected issue and cancelled our meeting with/without notice, I would call other teachers to check their availability to meet me and leave for another school. Very often, these spontaneous meetings would be just for tea and were useful in terms of building rapport with teachers. None of them was recorded, however, I took notes, with the teachers' permission.

On Tuesdays, I visited the afternoon shift in school A which was operating on two shifts (the primary visit day to this school was Thursdays to meet Zeynab and Fridays to meet Jamila). The main reason for visiting school A was teacher Jamila who had a long gap between morning and afternoon shifts – 4 academic hours. It was a crucial time for me to build a close relationship with her.

3.7.1. A multi-method approach

Since this study aims to explore a phenomenon – teachers' beliefs in a natural environment through an interpretative approach, naturalistic methods such as interviews and observations have been employed. A multi-method approach has been adopted as having a variety of methods for case studies provides me with different sources of evidence (Cohen et al., 2018; Yin, 2003) and allow me to "synthesise many kinds of data simultaneously" (Cohen et al., 2018, p. 387). This further helps me to analyse the data from different sources, look at the phenomena under study from different perspectives, bring together stated beliefs and observed beliefs and make inferences about congruence/incoungruence between them. Additionally, the findings of the multi-method approach are more accurate and reliable which enables me to triangulate the data collected through interviews and observations (Yin, 2003).

3.7.2. Semi-structured interviews

One of the methods employed to answer the research questions of this study was semi-structured interviews which have been extensively used in exploring individuals' perceptions of environmental issues (e.g. Yousefpour et al., 2020), as well as teachers' beliefs, understanding and thinking about the environment (e.g. Amerian & Pouromid, 2018; Gyberg & Löfgren, 2016; Lwo et al., 2017).

The reason why the interview is appropriate for my study is related to the fact that an interview is a tool for the "reconstruction of subjective viewpoints" on a topic being studied (Flick, 2009, p. 161). Since my research aims to reflect exploring subjective views, the interview makes it possible to search for the 'voice of the interviewee' (Brinkmann, 2018). Serving to answer the research question of this study which is about exploring teachers'

beliefs, interviews with its distinctive feature of “direct exchange” (Breakwell, 2012) make it an invaluable tool for probing into teachers’ thinking. A dialogue with a respondent enables me to probe into the points made by an interview that might seem helpful to answer research questions and contribute more effectively to the knowledge production process (Brinkmann, 2018). Besides, sometimes teachers are not aware of their beliefs and may hold tacit beliefs that can be explored by delving beneath the surface through interviewing.

Based on the study of previous researchers (Altmeyer & Dreesmann, 2020; Loughland et al., 2002; Lwo et al., 2017; Moseley et al., 2016), mainly on the New Ecological Paradigm (NEP) by Dunlap et al. (2000), I have developed my interview questions and updated them after the pilot study. The reason why I have chosen these studies to develop my interview questions is that I think having a discussion with teachers around these questions aligns with my research aims and enables me to well-capture the beliefs of teachers about the environment and consequently answer my research questions. Despite the extensive applicability of the NEP scale, it has not been used to explore in-service teachers’ beliefs about the environment. Besides, it has been used as a tool for quantitative measurement to explore beliefs about the environment. However, within this study, I modified the NEP scale to explore secondary school teachers’ beliefs about the environment, and 9 items (1, 2, 3, 6, 7, 8, 11, 12, 13) from a 15-item NEP scale (interview questions 3-8) were adapted and paraphrased to suit the nature of the qualitative questions (Table 10). The reason for choosing specifically 9 items but not all of them is that these items are directly intended to explore anthropocentric/ecocentric beliefs, while the other items in the scale are more concerned about the place of the human in nature or intertwined with other items. The exclusion criteria for each item are indicated in more detail in Table 10.

Besides the NEP scale, I have added some more questions from previous studies to discuss with teachers (adapted from: question 9 - Altmeyer & Dreesmann, 2020; question 1 - Loughland et al., 2002; question 2 - Lwo et al., 2017; question 11 - Moseley et al., 2016) (Appendix A).

Original NEP scale	Questions adapted for the interview	Reasons for merging and inclusion
Limits to growth		
1. We are approaching the limit of the number of people the earth can support 6. The earth has plenty of natural resources if we just learn how to develop them 11. The Earth is like a spaceship with very limited room and resources	8. Do you think natural resources are finite or can they restore themselves? Do you think humans should learn the ways of developing them? What can be the consequences?	Items 1, 6, 11 merged into one interview question (8) as I think for quantitative measurement they can be regarded as different items, but as for semi-structured interview questions, these items seem the replication of one another or opposing views and can be discussed around one question
Antianthropocentrism		
2. Humans have the right to modify the natural environment to suit their needs 7. Plants and animals have as much right as humans to exist 12. Humans were meant to rule over the rest of nature	5. Do you think humans have the right to modify the natural environment to suit their needs? Why? 4. Do you think plants and animals have as much right as humans to exist? Or do you think humans are more important than other living beings? Why? 6. Do you think humans are meant to rule over the rest of nature? 3. How would you describe the relationship between humans and nature?	Items 2, 3, 7, 12 were included in to interview protocol (questions 5, 4, 6, 3 respectively) to help me identify teachers' anthropocentric/ecocentric beliefs
The fragility of nature's balance		
3. When humans interfere with nature it often produces disastrous consequences 8. The balance of nature is strong enough to cope	7. What do you think about the balance of nature? Do you agree with the idea that the balance of nature is strong enough to cope with the impacts of modern industrial nations or it is delicate and	Items 8 and 13 merged into one interview question (7) as they present opposing views and can be discussed around a single question. It is likely during the interview the respondent covers this or another point, if not

with the impacts of modern industrial nations 13. The balance of nature is very delicate and easily upset **Rejection of exemptionalism** 4. Human ingenuity will ensure that we do not make the Earth unlivable 9. Despite our special abilities humans are still subject to the laws of nature 14. Humans will eventually learn enough about how nature works to be able to control it **The possibility of an ecocrisis** 5. Humans are severely abusing the environment 10. The so-called “ecological crisis” facing humankind has been greatly exaggerated 15. If things continue on their present course, we will soon experience a major ecological catastrophe	easily upset? Why?	the interviewee probes for in-depth understanding of the participants’ thoughts. **Reasons for exclusion** Items 4, 9, 14 suggest the idea that humans are exempt from the constraints of nature and explore the role of humans in nature. While I am more interested in investigating beliefs and item 3 of this scale (interview question 3) will discuss the human-nature relationship in general, I will not go into details by adding these items. Items 5, 10, 15 were excluded as well as I am not looking at teachers’ thinking about the ecocrisis. Besides, these items can be considered intertwined with item 3, as well as with the items of “balance of nature” as they present possibilities of discussing different aspects of human impact.

Table 10. NEP scale and interview schedule

Following Bryman's (2012) and Hermanns' (2004) recommendations to address practical details before conducting interviews such as becoming familiar with the setting and ensuring the interview takes place in a quiet and private space, I made multiple visits to the schools prior to the semi-structured interviews. These visits allowed me to familiarise myself with the environment and build rapport with the participants. I provided them with the necessary information about the research and teachers' involvement, and information sheets were distributed. I ensured my introduction was clear and 'does not compromise the validity of the participants' subsequent answers to questions (Breakwell, 2012, p. 370). That is, I informed my respondents about the general area of my research, that I am set to explore teachers' beliefs about the environment and observe their classes where they teach about the environment. However, I did not provide broad information about the environmental perceptions teachers may hold and the possibility of congruences or incongruences between beliefs and practice. My aim was not to lead teachers to provide answers related to my propositions so that teachers might express their beliefs as naturally as possible.

The interviews were audio-recorded and transcribed. One participant refused to be audio-recorded, so I was unable to record the first part of our interview and instead took notes but it was impossible to jot down everything the interviewee said. Being aware that note-taking may cause some important information to get lost and reinforce the interviewer's biases (Breakwell, 2012; Bryman, 2012) and considering it is the responsibility of the interviewer to create 'a climate for conversation' so that the interviewee feels relaxed and confident to speak (Hermanns, 2004, p. 210), I later suggested testing and recording for a few minutes and stopping the recording if she felt uncomfortable. After a few minutes, she noted that it was quite okay for her and I could continue my audio-recording.

One of the key characteristics of qualitative interviewing is the methodological flexibility it provides researchers in both designing and conducting interviews (Bryman, 2012; Flick et al., 2004). Drawing on this adaptability, I implemented several modifications to my interview questions during the data collection process to enhance the quality of the gathered data. I decided to exclude question 11 in my interview schedule and later from my data analysis "How do you feel about teaching misconceptions about the environment/ environmental problems? Can you please share any experience of yours?" as I could not get the relevant answer to my question during first three interviews, the interviewees preferred talking about the environmental problems in general and how they teach them rather than related misconceptions. For example, Mehri's answer to the question was:

> Mehri. What do you mean by contested nature?
>
> Me. For example, there may be differing views about environmental problems and their causes. For example, the reasons for ozone depletion may be different such as the greenhouse effect or car exhausts. Have you ever encountered difficulties in explaining misconceptions about environmental problems?

> Mehri. It is a very interesting topic… the negative consequences of depletion of the ozone layer… I explain it to the students in a very simple way. I take a piece of paper, make holes, and put it in the Sun. I am trying to explain to students that where there is a hole, we get sun rays directly… The ozone layer is like an umbrella protecting us from the direct sun rays. The sun rays coming directly from the holes are a threat to humans as they cause various illnesses…

Even if I went on to elaborate on what I mean, it seemed teachers were mainly relying on textbooks to form their subject knowledge and I assumed there is no reference to the misconceptions of environmental issues in the textbooks. As the sources of teachers' subject knowledge are beyond the limits of this research, I will leave it open here for further research.

Most schools had limited space, and there were virtually no free rooms available for conducting interviews during school hours. Initially, I held interviews in classrooms that were temporarily vacant due to PE lessons. However, these sessions were frequently disrupted by both teachers and students. I addressed the issue with school principals. At School B, no suitable solution could be offered. In fact, two interviews had to be paused and continued the following day due to persistent interruptions and background noise, which distracted the teachers and made it difficult for them to maintain focus. At the other two schools, alternative arrangements were made. Interviews were conducted in either unused storage rooms, former isolation rooms for sick students, or occasionally in the canteen during off-hours. One recall interview held in the canteen proved problematic, as external noise significantly affected the audio quality and made transcription challenging. As a result, I managed to conduct my interviews sometimes successfully, sometimes with some interruptions.

3.7.3. Post-observation interviews

Post-interview questions were much dependent on the lesson I observed as I planned to discuss teachers' lessons with them and elaborate on their actions during the class. The format of my questions for the post-lesson interview was:

- During class, I observed you doing/saying this particular thing, I would like to understand what led you to do/say that, is there a particular reason of yours for doing/saying that?

My primary aim was to make it clear to teachers I am not judging them for doing/saying a particular thing but trying to understand their rationale.

For example, during a semi-structured interview, Fariz mentioned that the first reason for preserving the environment should be its beauty:

> I think the most important reason to protect the environment is its beauty… what do we think about when we hear the word nature? We think of green trees, shrubs.. aren't they beautiful? they are beautiful, why destroy them? Either we can see green

> trees and enjoy them, or we can see the forests where the trees are cut down… Which one is better? They are the most powerful life-giving forces…If we destroy nature, it will destroy us as well…

After a few days, during class observation, I noticed Fariz's dialogue with the students where they were discussing the protection of the environment:

> T. Why do we need to protect the environment? What is the importance of trees and plants?
> St. They are a source of oxygen…
> T. What else?
> S. They are beautiful…
> T. You mean just for decoration? Besides decoration, the trees are for people. They are part of recreational resources that can be used for tourism and treatment. People need to rest to be healthy...

In the dialogue above, the main reason for protecting the environment was stressed as a means of providing humans with resources by the teacher. However, during the semi-structured interview teacher's beliefs reflected more ecocentric views, focusing more on the preservation of the environment, while during class observation teacher depicted the environment from a more utilisation point of view. This raised questions for me and we discussed this during our recall interview with the aim of understanding the differing perspectives of the teacher.

Post-observation interviews followed an iterative process, with the number and timing of interviews varying based on the classes observed and teachers' availability. In some cases, there was a gap of up to two weeks between the observation and the corresponding recall interview but I had at least one interview covering observed lessons with each teacher.

3.7.4. Classroom observation

In a case study, the researcher can get a great amount of information through observation. However, the research questions play the leading role in determining what information is relevant or what can be taken out (Stake, 2006).

Classroom observation has been used extensively to reveal teachers' beliefs (Amerian & Pouromid, 2018; Benavides-Lahnstein & Ryder, 2020; Gyberg & Löfgren, 2016). Within this research, I also used observation as a method that allowed me to probe into the depth of real-life matters without manipulating variables.

Since my research aims to explore the inner side of teachers in a real-life context, the role of the observation method emerges, confirming "at the heart of many case studies lies observation" (Cohen et al., 2018, p. 385). Similarly, Stake (2006) claims that for a case study, observation is "the most meaningful data-gathering method" (p. 4) as the researcher is present and can collect data directly "to generate a picture of a case" that later establishes

opportunities for others to see the case. In other words, observation is a source of "primary data" that establishes an opportunity "to see with your own eyes and perceive with your own senses" (Yin, 2016, p. 150), offering a "reality check" (Cohen et al., 2018).

I conducted at least three classroom observations with each teacher "to see with my own eyes and perceive with my own senses". All the observations were scheduled after the semi-structured interviews. I had a few more unscheduled observations before semi-structured interviews, where I was invited to the class by the teacher without any prior arrangement.

Not all classes had topics about the environment by the time I planned to start my observations. As such, there were no environmental topics in the 6th grade and only one topic in the 7th class (the last topic in the textbook), a practical exercise for students. Nine graders were busy with school-leaving exams and covered environmental issues in mid-February and March. 8th graders were a good match for my study as the lesson plan held a whole section related to the environment and, more importantly, was suitable in terms of timing (Figure 13).

Translation:

Figure 13. Extract from the content of the 8th-grade textbook and its translation

However, not all teachers had 8th graders. I decided to observe Life Skills classes of the same teachers (where environmental topics were covered in 5th and 6th grades) who were participants in my study and did not have 8th classes. As a result, I observed 23 classes, 16 geography, and 6 Life Skills subjects (Table 11).

Teacher	School	Number of observed classes	Classes observed	Grades of observed classes	Number of recall interviews
Jamila	A	8	Geography/ Life Skills	6, 7 (x2), 8 (x3), 11 (x2),	3
Zeynab	A	3	Geography	6, 7 (x2)	2
Fariz	B	3	Geography	8	2
Asli	B	4	Geography/ Life Skills	5 (x2), 7, 9	1
Mehri	C	5	Geography	6, 8 (x2)	3

Table 11. Details of observed classes and recall interviews

Before the observations, I reviewed the transcripts of the semi-structured interviews, made general notes, and kept them at hand during the observation sessions. Though it was not the same as in-depth analysis, reading transcripts several times gave me a general sense of teachers' beliefs about the environment. At later stages, observations provided me with extra information about the case in a natural context to identify actual problems (Yin, 2003) - confirming/rejecting the findings emerging from analysing the interviews.

I was a 'complete observer' where I was not a member of the group I was observing but my role as a researcher was open to all respondents and gatekeepers while at the same time being unnoticed (Cohen et al., 2018, p. 542). Though my observation focused on exploring teachers' beliefs about the environment, I used semi-structured observation to be able to consider possibilities of emerging issues rather than highly structured observation which intends to look only for certain categories or unstructured observation. I used a simple observation protocol noting the teacher's performance and my notes, self-reflection and impressions about it (Appendix B).

Reflexivity emerged as an inseparable part of all research during the observation. As a researcher, my position influenced how respondents behaved, as well as how as a researcher I interpreted their activity. Acknowledging that my "presence will have an unknown influence on the other persons and conversely, their activity may directly influence the way you do your observations" (Yin, 2016, p.153), I tried to minimise my presence in the class by keeping the recorder off their sight (I had their oral and written permission for audio recording) so as not to remind them continuously that they were being recorded, which could cause stress. Although the teachers signed the consent form and before the class, they were reminded that the recording would take place, I preferred to have a recorder with me, not to prevent the actual flow of the lesson. During my initial observations, I sensed that teachers

might feel uncomfortable whenever they saw the recorder. One of the teachers in the study lowered his voice to talk to one of the students who was noisy during class, noting that they were being recorded. This happened several times during the class. After the lesson was over, I reminded the teacher that we could stop recording at any time at any stage of the lesson, or even I could remove what I had already recorded. Despite the challenging context, the teacher seemed fine and told me I could keep the recording.

Keeping the recorder with me also helped me take notes about the timing of a particular activity and add my notes and feelings about that specific aspect that I might forget later or I would not have the same thinking while I listen to the recording at later stages (Figure 14)

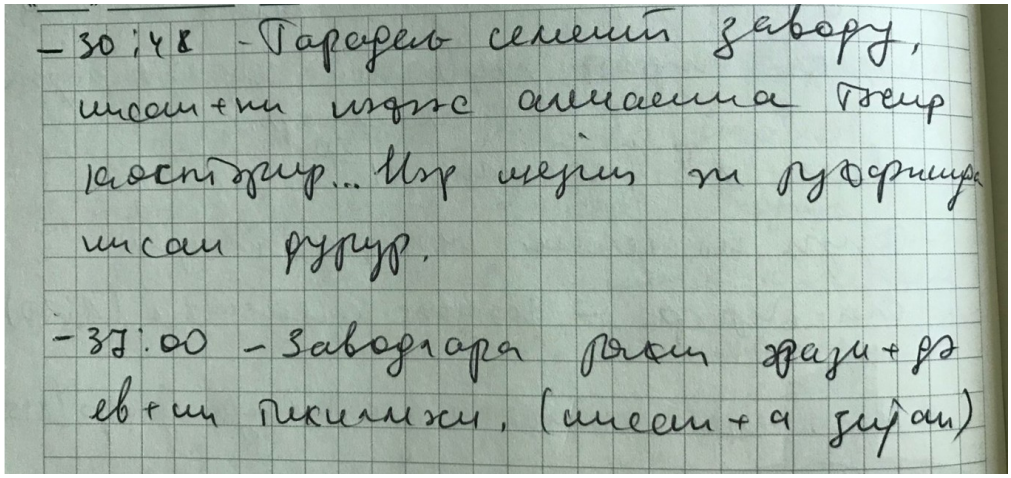

Figure 14. Fieldwork note

Another way to minimise this effect was to take a back seat without interfering with teachers' and students' performance. I also tried not to make eye contact with teachers and would observe everything happening in the class.

In some cases, I asked teachers' permission to take a photo of a board or the activities that students were doing as they would be removed by the end of the class. I kept an eye on collecting unobtrusive measures, defined as "recording aspects of the social and physical environment that are already in place, not manipulated by researchers or affected by their presence" (Yin, 2016, p. 153).

Acknowledging data collection entails "at least a small invasion of personal privacy" (Stake, 1995, 57), I tried to keep the number of observed lessons at a minimum of three with each teacher. However, the number of observations changed as some of the teachers were more willing to have me in the class (for example, with teacher Jamila I had eight observations).

3.7.5. Interview and observation data

The semi-structured interviews lasted about 60-80 minutes, recall and final interviews lasted about 10-15 minutes and each observation lasted 45 minutes – which equals an academic hour in our schools. All the interviews and observed classes were audio-recorded with the consent of teachers.

Interview and observation transcripts were sent to participants for member checking. Four teachers did not ask for any corrections. Only one of the teachers, Asli requested that I include additional statements at the end of the observation transcripts to better capture the conclusion of each class. Although I had transcribed what the teachers and students said during class, Asli felt that the transcripts ended too abruptly because I stopped as soon as the class was officially over. She noted that even after the class ended, teachers would assign homework, assess student performance, or provide other remarks, and she suggested that I document these as a separate paragraph before concluding the transcript.

I discussed this with Asli, clarifying that the data is solely for my use, would not be shared with anyone, and that adding a few extra sentences would not make a significant difference. My concern about following her suggestion was that, although all classes were recorded until the teachers left the room, the audio quality after the bell rang was often poor due to classroom and hallway noise. Therefore, I was reluctant to include any details in the transcripts that I may not have captured clearly in my recordings.

Considering there is no single correct way to transcribe or translate interview data, however, the methods chosen for transcribing and translating interview data influence the analytical questions that can be addressed (Flick, 2014), I decided not to translate the transcripts into English so as not to affect the quality of the data. Considering the interpretation of meanings is essential aspect of qualitative research, and the process of interpretation inevitably involves some degree of information loss while translating the data (Goitom, 2020) I preferred not to be engaged in triple interpretation by interpreting my own translations but preferred to be engaged with the direct interpretation of my respondents' thoughts through direct engagement with collected data not just by reading but also by listening which reminded me of the context of the conversation derived.

A lack of understanding of the data's context is often regarded as one of the key challenges in translating research data (Drugan, 2017; Goitom, 2020). Fortunately, this was not an issue for me, as my background, culture, and professional experiences were closely aligned with those of my respondents. However, translating the data could have introduced this challenge. For example, expressions like 'torpaq insanı' and 'təbiət insanı' from my respondents could be translated as 'a human of the soil' and 'a human of nature' respectively (Zeynab, BI, p. 2). Yet, without understanding the context in which these phrases were used and their precise wording in Azerbaijani, it would be difficult to accurately

interpret the teachers' intended meaning. Similarly, there were terms with no direct English equivalents, such as 'imajlik' or 'bəy.' During the coding and theme-generation process, I used transliteration and retained these words in their original form, providing footnotes to explain their meanings.

Another risk associated with data translation is the potential loss of emotion (Drugan, 2017). Even when terms or expressions in both languages have direct lexical equivalents, their 'emotional connotations' may differ significantly between the two languages (Birbili, 2000, p. 3). Keeping the data in its original form allowed me to revisit it whenever I needed to explore the context in which a particular conversation took place or to understand the emotions expressed by the teachers since 'qualitative researchers are frequently interested not just in what people say but also in the way that they say it' (Bryman, 2012, p. 482). I consistently cross-checked recordings and transcripts, and the process of listening during transcription and data analysis proved invaluable. As noted by other researchers (e.g. Bashiruddin, 2013), listening to recordings helped me reimmerse myself in the classroom environment and fully grasp the depth and breadth of the transcribed data.

Another reason I avoided translation was the limited English proficiency of my respondents. After transcribing the interviews and observations, I shared the transcripts with them to ensure they accurately reflected the original conversations and observations. Translating the data into English would have required me to share the translated versions with the participants, as it is crucial to obtain their approval to ensure no data is lost and that the translation accurately conveys their thoughts (Goitom, 2020). However, in my case, this would not have been feasible due to the respondents' limited English skills.

Above all, translating research data from one language to another is not merely a technical issue and requires not only 'accuracy and proficiency' in both languages (Bashiruddin, 2013, p. 355), but also an understanding of the 'cultural connotation' it conveys for the reader (Birbili, 2000, p. 4). Although I consider myself fluent in English, I believe I lacked the necessary contextual background in the language. Before embarking on my PhD journey, I had lived my entire life in Azerbaijan and learned English within an Azerbaijani context. Moreover, due to the COVID-19 pandemic, my first year, which I had hoped to spend immersing myself in an English-speaking environment, was disrupted. Consequently, I only had four months to engage with an English-speaking community before beginning my fieldwork.

Having the transcripts in their original language helped me to better understand teachers' in-class beliefs and to grasp cultural nuances that may otherwise be lost during translations.

3.8. Positionality and building rapport

Considering no research is free of the researcher's personal and professional background, values and culture (Berger, 2015; Bryman, 2012; Dean et al., 2018; Wigginton & Lee, 2014), I acknowledge that the way the research is conducted, "how we understand, describe, interpret and explain are shaped by ourselves" (Cohen et al., 2018, p. 302). Reflecting the researcher's location in time and space (Bryman, 2012) the same issues can be seen and valued differently by different researchers (Dean et al., 2018). Bryman (2012) defines this as "methodological self-consciousness" which is "taking account of one's relationships with those whom one studies" (p. 393). In the next subsections, I describe how my identity and social context inform my perspectives and biases related to the research and the importance of building rapport.

3.8.1. My background

I share many cultural, linguistic, and educational experiences with the teachers I study. I grew up in a small region, attending a local village school where my parents, both doctors, were well known in the community. From an early age, I was exposed to environmental values at home. My mother, a strong advocate for protecting nature, often reminded us to be respectful toward the natural world. One enduring memory is her grief over a tree cut down during the construction of our house. Even thirty years later, she recalls it vividly: "There was a beautiful tree here, tall with lots of green leaves, who knows what beauty it would have added to our garden if it were still here." This ethos influenced my sister who later became a sustainability expert and through her, profoundly shaped my own environmental awareness.

My schooling experience also connects me with my participants. Like many in my community, my exposure to environmental activities was limited to occasional village clean-ups, which were enjoyable but lacked deeper discussion of environmental issues. Later, as an English teacher in a private school, I brought my students outdoors whenever possible, recognising the joy and engagement that a change in setting could bring echoing my own longing for connection with nature during my school years.

At the same time, my trajectory has also distanced me from the teachers I study. I pursued higher education in English teaching, later working at the Ministry of Education, where my role gave me access to international frameworks and comparative perspectives that most classroom teachers do not encounter in their daily work. While my background as a teacher means I understood classroom realities, my current position afforded me the view of systemic issues, including the limited presence of environmental education in schools.

3.8.2. My role as a researcher

As a researcher and the teachers as researched, my relationship with teachers was threefold: 1. I knew them (in general); 2. I knew them (by profession); 3. I did not know them. I knew them in terms of sharing the same culture and general background; I knew them as I myself have been a teacher; I didn't know them as they all were different and unique as an individual and had different environmental beliefs. Sharing the same culture and language with teachers, also being a teacher, established my role with my participants as an insider. Also, being a doctoral student from a university abroad, exploring teachers' beliefs made my presence an outsider.

Due to shared regional background "cultural intuition" accompanied me during fieldwork and allowed me to approach the study with some knowledge (Berger, 2015). I became acquainted with the school life of my country through first-hand experience: as a student and teacher. Being back in school after eighteen years of gap, I felt nostalgic to be in a school community again after a long period, while everything seemed familiar. The differences I thought may have been between capital and village schools, also considering the eighteen years of gap that might have brought changes, did not prove my expectations. The schools I visited had small classrooms with limited or no advanced technology similar to those when I was a student. Though since 2006, the new curricula have been established, most teacher respondents had teacher-led approaches similar to those eighteen years ago. Those similarities positioned me in a more convenient place to start my data collection: I knew the cultural background of my respondents and the context they were teaching. As an insider, I was aware of cultural nuances, and hidden meanings that I could encounter. As a teacher of English, I was also aware of issues teachers may face. Trying not to impose my views and experience on participants and to lead them to articulate certain answers, I preferred not to comment or present my views in case I was asked by a certain participant to do so.

The advantage of being an insider and familiar with the field also presented difficulties that influenced my approach to research. Knowing the field created opportunities for over-familiarity that could cause missing some potential data, not considering them important or taking them for granted, or even going further, not considering them important to report. For this reason, Barley & Bath (2014) warn against over-familiarity and stress the importance of reflexivity. Trying to be self-reflexive throughout the research process, I tried not to take my assumptions for granted (Braun & Clarke, 2019) and indicate areas of bias (Ahern, 1999). Being an English teacher and working as a teacher in one of the private schools, I knew I had my own teaching methods that I considered a suitable way to be followed in my classroom practice, but I tried to be cautious not to label my teacher respondents' practices "good" or "bad" by "repairing my identity position" (Wigginton & Lee, 2014). I worked

consciously to maintain a stance that avoided judgment. Wigginton and Lee describe how, in conversation, people sometimes "repair" their identity position when they notice a tension between what they have said and how they wish to present themselves. In their example, a participant initially positioned herself as judgmental about pregnant women who smoke, but then used the conjunctive but to reframe her account in a way that aligned with a non-judgemental identity. In my case, this meant that if my wording or reaction risked positioning me as implicitly endorsing or rejecting a teacher's practice, I consciously reframed my language to foreground curiosity and openness rather than moral evaluation. For instance, instead of responding with an approving "That's great" or a disapproving "That's not ideal," I would reorient the conversation toward understanding the teacher's reasoning and the context behind their choices. This was my way of "repairing" my own identity position during the research interaction ensuring I was seen, and saw myself, as an open, respectful inquirer rather than a judge of their professional behaviour. It was a crucial first step before entering the classroom for me as a non-participant observer.

The researcher needs to be aware of his/her own biases, which Bryman (2012) calls "confession" – "an element of which is often the writer's preparedness to be open about his or her personal biases" (p. 41). Trying to manage my personal judgment, throughout the research process, especially during direct interaction with my respondents, I avoided being judgmental, which served as "identity repair work" (Wigginton & Lee, 2014) and directed to resolve the disagreement between two conflicting views.

As I had my own environmental beliefs, I was aware of my biases and I needed not to judge teachers' beliefs about the environment positively (that aligns with my own beliefs) or negatively (that do not align with my beliefs) considering Bryman's suggestions to be 'non-judgemental' (Bryman, 2012, p. 473). Knowing about it I tried not to judge or differentiate between "better" or "worse" beliefs and constantly reminded and iteratively questioned myself. To avoid this bias, I tried to figure out how teachers described and put their beliefs into practice and what their rationale was.

My position as an outsider assisted me in not being over-familiar, being less emotionally and physically involved helping me to keep "golden mean[1]." None of my teacher respondents had experienced working with a researcher before. They never had direct or indirect involvement in any research project. My presence as an outsider doubled as apart from not having experience participating in a research process, teachers' perception of taking part in research was somehow "blurry" as they had never heard any teacher from a public school to be involved in the research process. This established some challenges. Seeing me as a doctoral student studying at a UK university, teachers were not confident

[1] The "golden mean" — in Azerbaijani *qızıl orta* - is a metaphor for taking a balanced, moderate approach between two extremes.

enough about their participation. They kept asking if they could make some contribution and if their participation was worth it at all. Teachers often suggested, “I do not know if my answers may have any help to you. If you want, we can record our interview one more time” or asked to have interview questions before the interview date to have some preparation. It happened after the observations as well when teachers said it was all they could do, they would be more prepared if they knew they were going to have a researcher at their school.

The researcher is seen as the one with more power, information and resources (Cohen et al., 2018). However, I did not want my respondents to see themselves as less powerful and the challenges of being an outsider eased as my relationship with teachers improved throughout the research process, that I write in the following subsection.

3.8.3. Building rapport

Knowing it is crucial to get to know the field in producing quality fieldwork, during the first three weeks of my fieldwork, I visited the schools that agreed to have their teachers to take part in the study. Barley & Bath (2014) defines “familiarisation period” as the first stage “to allow the researcher to reflect on their own position within the research as well as to establish their position (or role) as a researcher within the community” (p. 9). As I had difficulties recruiting my participants, in some cases, I tried to build relationships with my “intended” participants before inviting them to participate in my research project. The first time I met Jamila, she showed me her hectic schedule, noting she was too busy. When I explained my research project, she said that according to the new curriculum, most of the time, it was the students that talked during classes rather than the teacher and that it would not be possible for me to observe their performance during observations. It seemed like a negative response to participate. Zeynab from the same school was unsure about her participation and made a firm decision not to participate when she knew the interview and observations were to be recorded. However, as I had many unsuccessful visits to other schools and there were three geography teachers at that school, I had chances to recruit at least one of them, I did not want to seize this opportunity. Taking the advice of Ahern (1999) to transform problems into opportunities when blocks occur, I kept visiting that same school and had a chance to meet these teachers in the teachers’ room and in the canteen to have some tea and lunch. After a week when I met Jamila again and had a brief chat about everyday issues, the teacher who seemed to hesitate during our first meeting offered her willingness to take part in my research project. Starting my research with Jamila was a good sign for the other two teachers as well, as they witnessed that being involved in a research project was not that demanding and would not interfere with their usual class routine. At

school A, familiarisation and builidng rapport started before the actual data collection commenced and as a result, I was able to recruit two teachers from that school.

The advantages I had as an insider made it more accessible to establish rapport with teachers. The main site for socialising with teachers was the teachers' room (Figure 15), where teachers gathered for five-minute short break (also for a long break which was 15 minutes once a day between the third and fourth classes). It was also a place for teachers who had "pəncərə" (which means 'window' and used as a word in schools to refer to the between-classes gap) to sit and have some chat or check student papers, write student journals, discuss matters related with students and also for me to work and meet with my respondent and non-respondent teacher of the same school.

Figure 15. Teachers' room in school B (my seat - the table with the open laptop in front of the window on the left. The oil tanks are seen through the window)

The teachers saw me as someone with experience studying abroad, and so they asked me about the procedure and application process. Two of the teachers were interested in studying abroad, and the school principal at one school asked me to help geography teachers build a project for the grant application. One of the teachers asked me to have a class with students she was tutoring and I made a presentation for the students discussing with them the importance of preserving the environment and informing them about environmental activist Greta Thunberg. I took a neutral stance during the class presentation,

leaving it for students as an open question to think why the environment is to be protected. On the one hand, I wanted students to explore the problem and answer by themselves, on the other hand, as the teacher was present in class, and we still had a few more observations left, I did not want the teacher to be affected by my views.

I tried to socialise with the other teachers of the school to make my place at school more natural, to be seen as an insider. They all, directly and indirectly, helped me to develop a strong relationship with my teacher respondents to build up friendships and communicate.

3.9. Data Analysis

I have taken an expansive approach which began at the earliest points of data collection through to more formalised periods of analysis. Although the expression 'data analysis' seems to present the thought that the researcher starts to analyse the data after the data has been collected, it has been stated by many scholars that data analysis in qualitative research covers all the stages of the research process: from early 'first impressions' (Stake, 1995) or during data collection (Cohen et al., 2018; Yin, 2016). This research developed the data analysis approaches presented by several qualitative researchers: stages of qualitative data analysis by Yin (2016) and Creswell & Creswell (2018), data analysis strategies by Stake (1995) and thematic approach by Braun & Clarke (2006, 2013, 2019).

Considering I have chosen a case study as my research approach, I have employed case study analysis to organise, interpret, and present data from individual cases. Moreover, I have chosen a thematic analysis to identify, analyse and interpret 'patterns of meaning' – themes across a dataset (Clarke & Braun, 2017, p. 297) in my discussion by referring to cross-case findings. The primary method of analysis was the inductive thematic approach "to allow research findings to emerge from the frequent, dominant, or significant themes inherent in raw data" (Thomas, 2006, p. 238) which I discuss below.

I formulated the stages of the within-case inductive analysis and cross-case thematic analysis based on the suggestions by Creswell & Creswell (2018) - stages of analysing qualitative data and by a similar framework suggested by Braun et al. (2016) and Braun & Clarke (2006) – five stages of analysing the thematic approach: 1) getting to know the data; 2) generating codes; 3) developing categories; 4) revising and naming categories; 5) displaying the themes(discussed in 3.9.2).

In the following subsections, I discuss the data analysis procedure and rationalise choosing an inductive approach broadly.

3.9.1. Inductive case study analysis

Following the nature of the research questions of this study which requires the researcher to be vigilant about what can emerge out of the data, exploring teachers' perspectives about the environment, I started with analysing my data through an inductive bottom-up approach. I used the inductive method primarily because teachers' beliefs about the environment in Azerbaijan have not received research attention. Therefore, I wanted to ensure that the research design and analysis created space for the possibility of new themes emerging from this context.My research sample consists of a number of teachers - it is the case of the beliefs of five teachers about the environment and teaching about the environment and these beliefs depend on the particular situation and conditions they emerged. For this reason, I did not apply existing rules. Because of the exploratory nature of the study, I mainly analysed my data inductively. Based on the findings of my research, similar beliefs were observed across some of the cases. However, these findings are only indicative, not conclusive, meaning they cannot be generalised to a larger population solely on this basis.

The inductive analysis covered five separate but at the same time interrelated stages. Though I numbered stages from one to five, sometimes analysis did not follow the exact order as I continuously referred back to the first stage by reading transcripts and listening to audio recordings, adding/removing codes/categories and updating findings. The stages of inductive analysis are discussed in the following subsection.

3.9.2. Stages of within case inductive data analysis

I had five cases in my study: Jamila, Zeynab, Asli, Fariz and Mehri. I started my analysis with Jamila, who was willing to share her time with me, continuously invited me to her classes. I planned to have at least three observations with each teacher, and I had three observations with Zeynab and Fariz, four observations with Asli and five observations with Mehri. With Jamila, things developed differently. Even before we managed to have our initial background interview, she invited me to her class to observe her class. As a result of her efforts to help me get as much data as possible, I had eight recorded interviews with Jamila. She was the first to respond to all my messages, check all the transcriptions of audio-recorded interviews and class observations, and give her consent for further analysis. As she was easy to communicate and was the first to send me back the transcribed data, I started my analysis with Jamila's case. At later stages, the other four respondents also sent me back the transcripts.

Based on the data analysis framework of different researchers mentioned above, my data analysis process followed the following stages:

Stage 1. Knowing my data. In the first stage, the interviews and observations were transcribed manually which was a good way to familiarise myself with the data and get the depth of the content (Braun et al., 2016; Braun & Clarke, 2006). Besides, transcripts were sent to the participants to make sure they agreed with the content of the transcribed interview and make corrections if necessary.

Though time-consuming, repeated reading was a crucial first step to start the formal analysis procedure, and reading in an 'active' way, where I searched for patterns, helped me to get a general sense of the data. Getting the overall meaning of the data, assisted me in generating codes at the next stage.

Stage 2. Generating codes. After transcribing and familiarising myself with the data, I put the data into two different groups related to the source of information: interview data and observation data. The reason for dividing the data into two categories was linked to my intention to analyse interview and observation data separately so that further I could explore how teachers' beliefs are associated with their own teaching and search for compatibility/incompatibility between teachers' beliefs and classroom instructions.

Qualitative research presents a huge amount of data to be analysed at the outset of research but not all of them can be used in a qualitative study (Creswell & Creswell, 2018). For this reason, coding is a crucial stage of data analysis that is called analysis (Stake, 2010) or disassembling (Yin, 2016) procedure. Trying to pull the data apart and put them back together more meaningfully (Stake, 1995), I started assigning labels – codes to the fragments (Yin, 2016). It was the act of "taking text data or pictures gathered during data collection, segmenting sentences (or paragraphs) or images into categories, and labelling those categories with a term" (p. 269). Following the advice of Braun & Clarke (2006), to "code for as many potential themes/patterns as possible" (p. 19), I coded all the patterns that seemed important/not important as I was not sure what they might reveal at further steps. Coding helped me to summarise the data to the extent that it was manageable.

I read the same data with some break – I read it a couple of times before leaving it for a day or two and then returned to reading that same data after several days. It was a useful strategy to have a fresh eye on data and explore it from different perspectives. Every time I read the data after the break, I could sense something useful that I missed in my previous reading and added more codes with different coloured pens which helped me to see how my coding evolved between my readings (Figure 16). It was an iterative process and I stopped reading when I did not seem to encounter any new codes. Though coding is one of the initial stages in commencing data analysis, it continued until the end of the research as I continuously referred back to the data.

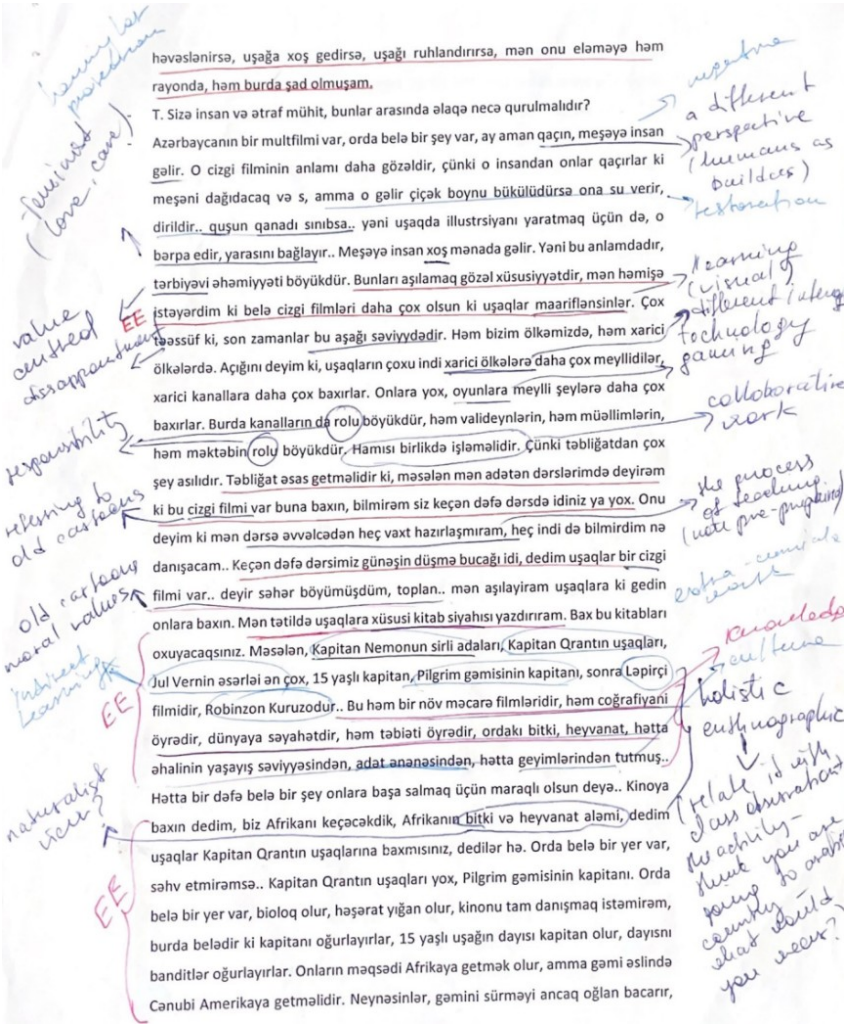

Figure 16. Coding my data

During the coding procedure, the generated codes seemed to fall under several categories. As I was exploring teachers' beliefs about the environment and teaching about the environment, I was expecting the emergence of some codes based on the literature review, for instance, codes under sub-categories utilisation (such as trees for humanity, plants for medicine) and preservation (such as love for nature, caring for animals). So I labelled these codes as 'expected' (Creswell & Creswell, 2018) in my data analysis. There were also codes 'surprising' (ibid.) that I had not anticipated before the study, such as codes under restoration (such as soil quality improvement, renewable energy, waste recycling) and religious categories (such as sacred nature, god as creator of nature). These codes mainly shaped the inductive analysis part of the study.

Stage 3. Developing categories. Establishing categories was the backbone of the whole research process, where I synthesised (Stake, 2010) and reassembled (Yin, 2016) the coded data. Based on my research questions: What are teachers' beliefs about the environment? What are teachers' beliefs regarding teaching about the environment? and how teachers' beliefs about the environment and teaching about the environment enacted in

their classroom practices? I identified two broad area for analysing my data which were consistent across all cases: beliefs about the environment (stated and observed) and beliefs about teaching about the environment (stated and observed). It was when I started to think about bringing similar codes together to form categories related to the whole data set based on the relationships between codes. categories were developed to explore the relationship between different data types - to reveal similar or different patterns between teachers' beliefs as related to their classroom practice, and comparisons of the interview data with observation data were conducted. While two areas – beliefs about the environment and beliefs regarding teaching about the environment were the same across all cases, the established categories were not consistent and categories for each case were developed inductively based on the codes specific to the particular case and not depending on the categories of previous cases though similarities were observed in some cases between emerging categories. For instance, with Jamila, the identified categories were utilitarian, preservation, restoration, cultural, religious and aesthetic related to the first area – beliefs about the environment. While some of these categories were indicated in other cases as well (e.g. utilisation and preservation), some of them (e.g. cultural and religious beliefs) were evident only in Jamila's case. Similarly, strong ecocentric beliefs were observed in Asli and Zeynab's cases, while this category was overtaken by anthropocentric beliefs in Jamila, Fariz and Mehri's cases.

Stage 4. Revising categories. At this stage, I carefully revised the categories. Revision of categories was very useful as I decided to add/change some categories. For instance, while revising categories in Jamila's case, I decided not to make technological beliefs a separate category but make it part of romantic beliefs as Jamila's technological beliefs about the environment seemed to be one of the major factors she thought to harm nature and prevented her from enjoying its beauty. Also, I decided to change the 'ethnographic' category into 'cultural' to avoid vagueness and represent its meaning more clearly.

Stage 5. Displaying findings. The next stage was drawing a conclusion when I was ready to present 'regularities, patterns, explanations, possible configurations, causal flows, and propositions' (Miles & Huberman, 1994, p. 11). Choosing a narrative passage as a way to report my findings in an organised form, I also used a number of tables to ensure immediate accessibility of the findings where I display teachers' stated beliefs vs observed beliefs (Table 12).

Though presented as different parts, flows of data analysis were interwoven and continuously influenced one another.

Stage 1. Familiarising myself with data, transcribing (example extract)	Stage 2. Generating codes	Stage 3. Developing categories	Stage 4. Revising/ naming categories	Stage 5. Reporting the findings
I used to love nature still when I was a little kid…maybe it is something I inherited from my mom… She wrote poems, liked literature… especially she liked reading ghazals… I remember the first time I went to Kabalaka, an ancient Azerbaijani city… its nature was very beautiful… still, in the second century people used to live there... they had a sewage system that you couldn't see in most countries at that time… they laid water pipes through mountains… they had freezers under the caves... It was something God graciously granted us… but I feel bad that many tourists come to see these places from other countries but our people have little information about it… (BI, p. 3)	Love for nature, childhood memories, inheritance from family, mother as a role model, literature and nature, place-based love, cultural inheritance, ancient developments , ancient artefacts, feelings for God, God's gift for humans, worship the beauty, regret for not getting enough respect.	**Ethnographic** (place-based love, cultural inheritance, ancient developments, ancient artefacts) **Religious** (feelings for God, God's gift for humans), **Romantic** (love for nature, childhood memories, inheritance from family, mother as role model, literature and nature worship the beauty,	Cultural, religious, romantic-aesthetic beliefs , Cultural-anthropocentric beliefs	Jamila's cultural-anthropocentric beliefs reflect cultural, religious and aesthetic views related to the environment which are sometimes intertwined, making it difficult to draw a clear line between them. The passage shows that cultural, religious and romantic beliefs appeared to be deeply ingrained in her place-based love - love for her country. She links her passion for nature with her mother and poetry. Linking her mother and nature seemed to be a sign of her beliefs of common features between the two: source of life-giving - "mother nature" (romantic and cultural beliefs). Besides, Jamila linked nature and poetry, to her both seemed to have rhythm and harmony that bring silence, peace and tranquillity (romantic beliefs). She loved the country she was born in, loved the villages with ancient artefacts (cultural beliefs). She was proud of her country, cultural inheritance (cultural beliefs), worshipped its beauty (aesthetic beliefs) - the beauty that was sent from God (religious beliefs). However, she was also concerned about the preservation of these cultural artefacts.

Table 12. Example inductive data analysis

Stage 6. Cross-case analysis - The starting point for the thematic analysis was revisiting the categories and conclusions developed during the within-case analysis of each individual case (Figure 17). Based on this foundation, I shifted focus to a thematic cross-case analysis, examining the five teachers collectively rather than individually. This approach highlighted both similarities and contrasts in their beliefs and teaching practices. Through this comparative lens, new layers of meaning emerged, contributing to a more comprehensive understanding of teachers' beliefs about the environment and teaching about the environment.

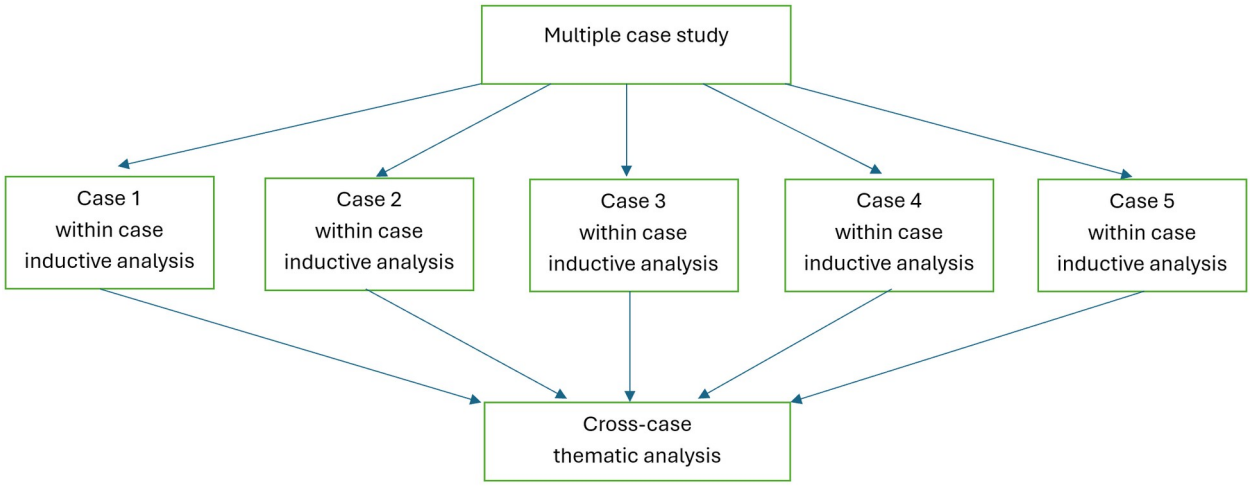

Figure 17. Cross-case thematic analysis

Although induction was the main tool for data analysis within this study, emerging themes presented similarities with the previously established categories that I discuss in the following subsection.

3.9.3. Inductive data analysis framework

As a result of inductive analysis, I propose my framework to analyse my respondents' beliefs about the environment.

Not all categories were represented evenly in all respondents' beliefs. There were differences between the cases and within the cases in reflecting the emerging categories. For instance, the extent respondents hold ecocentric and anthropocentric beliefs differed across cases. Some of the participants hold strong ecocentric beliefs (e.g. Zeynab) or anthropocentric beliefs (e.g. Mehri), or they had balanced beliefs - balancing ecocentric and anthropocentric beliefs (e.g. Jamila). While some of them shared similar beliefs about protecting the environment, Jamila was the only one to connect environmental and religious beliefs.

Within case tension was observed in several cases. Almost all teachers noted the importance of technology, while Jamila's beliefs about the role of technology in environmental protection were not straightforward: she believed in the power of technology to restore nature, while she also believed the devastating effect technological advancement had in destroying the natural environment.

Below, I added an example of an analysis framework bringing examples from one of the participants, Jamila (Table 13).

Belief (category)	Examples of teacher's stated beliefs	Example of enactment within the classroom	Focus of interaction (object/ relational)	Nature/human domination (Anthropocentric/ ecocentric)	Congruence/ Incongruence between stated and observed beliefs
Utilitarian	Natural resources provide us with our basic needs… with food, energy, and raw materials for the production of goods… (BI, p. 13)	We use them in construction, how do you think we get materials for floors, for ceilings? They are made of wood… What about tables and chairs? Again wood… even these (the teacher shows desks) are made of the bark of trees. Papers, notebooks, textbooks – are all made of wood… (CO1, p. 2)	object (environment is seen as an object – food, energy, wood)	*anthropocentric* (nature, natural resources are for the humans)	congruent
Restoration	Jamila's restoration beliefs were reflected in the visual activities. During the interview she brought an exmaple of the cartoon "A man in the forest" where the general essence is restoring nature for the sake of all living beings.	During class teaching Jamila showed the image of a man's foot with flowers under the shoe. The message of the picture was a man is capable of restoring the nature.	object – presenting the environment in the form of forests, animals, trees.	Mostly *anthropocentric*; *ecocentric* beliefs were observed as well – protecting the environment for the sake of plants, animals, humanity.	congruent
Protection	**Conservation beliefs**. We need to protect the environment for future	**Conservation**. Recently you may observe synthetic materials are used in	object (materials for construction,	**Conservation** beliefs - *anthropocentric* –	congruent

generations. It is our historical heritage. There are threatened species, we may see them only in Red List. Or there is an extinction risk of thousands of species… Can you imagine what can happen if so many species become extinct? (BI, p. 11)	construction, like laminate flooring… this may prevent trees from cutting down… (CO1, p. 3) The best way, I think, is to use water very sparingly… (CO3, p. 3)	wood)	protection of the environment for future generations
Preservation beliefs.	**Preservation**. She referred to different historical places in Azerbaijan – Icharishahar[1], Azykh Cave[2], Gobustan Rocks[3] stressing the importance of exploring, preserving and delivering them to future generations intact (CO5, p. 6)	object – historical monuments are expressed as objects	**Preservation** - There is an interesting *contrast* – historical monuments are man-made, but their protection entails *ecocentric* beliefs. They have changed the essence of their existence from *anthopocentrism* (by serving the needs of human beings) to ecocentrism (now protected for their

[1] Icharishhar which literally means "Inner City" is the oldest part of the capital Baku and was included into UNESCO's World Heritage List.
[2] Azykh Cave with 350-400 years of history was discovered in 1960 in the territory of Azerbaijan.
[3] Gobustan Rocks with 15 thousand years of history is located close to the capital Baku and was included UNESCO's World Heritage List.

				intrinsic value)	
Cultural	… Kurdamir (the region she was brought up) historically was located on the ancient Silk Way… with the merchants from China, India and other countries passing through Kurdamir we had cultural "exchange" (BI, p. 3)	… their life is adapted to that environment… Their traditions are adapted to the forest as they live in there. Even in old Russian movies the plates of Chars' were wooden. In Europe, in Russia you can see little houses made of wood… (CO1, p. 1-2)	relational - humans are in a realtionship with the physical environment they are brought up that shapes their cultural environment	*Anthropocentric* – all are meant for humans	congruent
Religious	Environment is a house we live in. The way we treat that house, it treats us back the same way.. like a boomerang.., if we enter the house with positive feelings, we will live in it with good memories… It is reflected in our religion... Our religion taught us to say "salam" even if there is no one at home.. it sends good vibes and creates a relaxing atmosphere… The same attitude should be expressed towards the environment… (BI, p. 8)	God sends us the needed amount of ultraviolet radiation, it is good for human health as it triggers vitamin D and strengthens bones, muscles and the body's immune system (CO3, p. 10)	relational – religious values influence the relationship between the environment and humans	Mostly *anthropocentric* - we need to protect the enviornment as if it is our house *Ecocentric* beliefs were observed as well	congruent
Romantic-aesthetic	The environment is where you see mountains. I love	The hydrosphere is like a cloth of land, its decoration... It is	relational – all the components	*Anthropocentric* - nature brings peace	congruent

mountains; they reflect “rise”, no boundaries... It is green alpine meadows... It is a river running through a valley at the foothills... It is a scree close to mountains and rivers... Butterflies... Grazing sheep... The environment is the feeling of calm, peace, tranquillity… (BI, p. 10)	like a precious stone of a ring… Imagine there are holes in the oceans instead of water… how ugly it would look… I mean its physical appearance… besides, water is the source of life… (CO8, p. 3)	of the environment, including humans contributes human-nature harmony – coexistance is the door to peace of mind	and tranquility

Table 13. Data Analysis Framework

3.10. Trustworthiness

Guba & Lincoln (1994) propose two sets of criteria for judging the quality of research nested within the constructivist paradigm: trustworthiness and authenticity. While trustworthiness has been quite influential and is being referred to by many researchers to judge the quality of their work, the applicability of authenticity has remained controversial (Bryman, 2012). Within this study, trustworthiness reflects my position to judge the quality of my work as it aligns with the nature of my research, which is conducted within the framework of naturalistic inquiry and reflects the different aspects of being trustworthy in my study. Trustworthiness includes credibility, transferability, dependability, and confirmability.

Credibility. Credibility is assessed by demonstrating "truth value" and gaining the quality of being believable. So, it is the researcher's responsibility to make others trust his/her findings worth believing. The authors suggest several techniques to achieve credibility. Within this study, I try to achieve credibility through *prolonged engagement*, where it is suggested the amount of time spent in the field has to be sufficient to embrace the culture of that same environment. My time of prolonged engagement had two phases: before the research and after the research. Conducting the research in my hometown and having experience as a secondary school teacher gave me a chance not to be a "stranger in a strange land". In the second phase of prolonged engagement, I spent the maximum time I could in the field which was sufficient to explore teachers' beliefs in two schools within the time constraints I had. Prolonged engagement also enabled me to build rapport with teachers, which had paramount importance in achieving credible findings.

As another technique to reach credibility, I address *source triangulation* by asking my respondents about the same point of theirs but with differently posed questions and data triangulation by collecting data from different sources through interviews and observations that allow me to credibly verify my findings.

Besides, *member check* is addressed by sending the transcripts via email to the respondents to make sure what they said or how they acted are clearly depicted in the transcripts, no corrections or additions are made.

Transferability. One of the major concerns linked to a case study is limited possibilities for transferability that is sometimes referred to as generalisation in the literature. The way the term "generalisation" is used related to a case study defines whether the findings can be generalisable or not: 1) the generalisation in the meaning of replicability of the findings; 2) generalisation in the meaning of presenting "vicarious experience".

Within the scope of this study, I refer to the second meaning of generalisation and provide a thick description of the data that enables the reader to feel the real sense of what has happened and consider the overlap between the experience in research and his/her own.

Comparing case study design with experimental design, Yin (2003) argues that scientific facts are acquired after several experiments prove that to be true and the same can be done with multiple case studies but in a different way: by replicating findings several times. If the same findings are acquired after several replications, the results can be generalised and can provide a basis for generating theory out of findings. However, unlike an experimental study that is much concerned about 'statistical generalisation', case studies are more about 'analytic generalisation'.

Hitchcock & Hughes (1995) argue that generalisation is possible in a case study though it should be distinguished from the same term in the quantitative study, we can not expect to get the same results in several qualitative research but we can generalize from to what extent our findings overlap with the findings of other similar qualitative studies, 'degrees of generalisation ' has to be taken into consideration. Similarly, Bassey (1999) presents the notion of "fuzzy generalisation" opposite to scientific generalisation where there is an indication of likely exceptions.

However, Cousin (2005) states that generalisation in a case study comes with focusing on the rich description of data so that readers can get "vicarious experience" about the case and if they have experienced a similar case, that opens ways to "naturalistic generalisation " (Stake, 1995) which is characterized by "intuitively" transferring the research findings to their own situation (Tracy, 2010). In somewhere else, Stake (2010) states that "we try to observe and record closely so that we can describe it in ways the reader can experience it, having the feeling of being alongside the observer" (p. 139).

Holding on Stake's (2006) claims that case studies are more about particularization rather than generalisation, I conclude by stating that the findings of this research project do not lend themselves to the generalisation in the first meaning generalisation is used to acknowledge there is more than one reality and every individual's experience is unique that can not be a source for generalisation. However, I provide readers with a "rich, thick description" of the data hence detailed descriptions make the findings "more realistic and richer" (Creswell & Creswell, 2018) and most importantly, enables the researcher to show but not to tell so that the readers make their own conclusions (Tracy, 2010).

Dependability and Confirmability. To establish dependability, which means "stability of findings over time" (Korstjens & Moser, 2018) and confirmability to prove the findings derived from the data, I turn to the audit trail as suggested by Morse (2018) one

of the ways of determining rigour in interpretative data. I conduct an audit trail throughout the project that helps me to keep track of my decisions and reminds me of "the results of 'early thinking' later in the study" (p. 1399). A detailed description of how I made progress while working on my project, how I went about coding, why and how I brought different codes together to form particular themes by providing examples, etc., is kept to reflect "transparency" (Tracy, 2010) and consistency (Lincoln & Guba, 1985) about the research process.

3.11. Ethical considerations

This study strictly followed the British Education Research Association's Ethical Guidelines for Educational Research (British Educational Research Association, 2024). BERA recommends that the following ethical issues have to be taken into consideration: consent, transparency, right to withdraw, harm arising from participation in research, and privacy and data storage.

The ethical principles reflected in BERA are in line with the ethical procedure noted by Lincoln & Guba (1989). They state that searching for a single reality can cause ethical issues and researchers should acknowledge that there can be more than one reality to avoid ethical problems. Following legal responsibilities reflected by the authors, below mentioned ethical issues have been taken into consideration:

- No harm – it has been ensured that the respondents are not under any harm or risk. Participants may need some time to take part in the interviews. In order not to spend much time on the interview, I visited respondents' schools to conduct the interview and made sure the interview time did not interfere with their classes. During the observations, I took a back seat without interfering teacher-student relationship and took my notes. No one had access to the collected data except me and the identities of teachers are kept anonymous.
- Fully informed consent – has been obtained from all participants. With the consent of teachers, the interviews and observations are recorded and transcribed later. The rights of teachers to withdraw from taking part in the research at any stage of the study have been made clear.
- Protection of privacy and confidentiality - the names of schools have been anonymised and the names of participants have been pseudonymised, the teachers are informed that their identities are to be kept anonymous. Transcriptions of the interviews and observations were stored on OneDrive for Business.
- No deception – participant information sheets are circulated among teachers and it has been ensured that the respondents have not been deceived in any way at any stage of the research process, following the recommendations by BERA (2024) to be open and honest with participants" (p. 6).

Taking into consideration that I approached MoSE and school principals at the first instance to be able to recruit my participants, having the agreement of MoSE and principals might put teachers in a position to see their participation as a “must”. However, during the first meeting with teachers, also throughout the data collection process, I made it clear to teachers that their participation in the research was beyond their job responsibilities and totally voluntary, and if they did not wish to participate or to withdraw later it in no way could affect their teaching career or their relationship with the school principal. I believe I may have sensed teachers’ attitudes about taking part in the research from our initial meetings. It was an important factor as teacher participants had to dedicate a substantial amount of time to the research and teachers seeing it as an obligation might not have expected assets to research findings. I made sure not to involve teachers who were not motivated and enthusiastic about contributing to my research project.

Post-observation interviews entailed probing into teachers’ practice during classroom interactions that aim to explore congruences/incongruences between teachers’ stated and observed beliefs. However, revealing dissonance between a person’s beliefs and their practice can raise some ethical issues and teachers may feel uncomfortable about talking about them. Considering how my role as an outsider and my positionality as a researcher can influence my interaction with teachers, my main duty here is to make it clearer for teachers that I am not being judgmental, I am not asking the “Why” question to judge them for what they did during the class but want to learn more and discuss the rationale behind it. The main principle that guided my approach is “unconditional positive regard” (Rogers, 1992) that helped me to accept my respondent “as a separate person, with permission to have his own feelings, his own experiences” (p. 829) where I neither approved nor disapproved but simply accepted and helped them to feel comfortable to share their thoughts without fear of being judged. For example, during the pilot study, one of the teachers (with strong ecocentric beliefs) mentioned that s/he is against hunting and killing animals. At some point in our discussion, s/he brought an example of bringing a bird into the classroom and removing its head from her own experience, and showing its internal organs to the students. While making sure that I am not judging the teachers for removing the bird’s head, but aiming to explore the teacher’s views about that and understand them I ask: Can we discuss this particular activity? Do you think it is important? Why do you think it is important? Is it important only in the context of this particular lesson or in general?

In accordance with BERA's (2024) ethical guidelines, this research considered its wider implications for the global community and the environment, especially regarding sustainability, climate change, and biodiversity. The research design and questions were critically reviewed to ensure they aligned with ethical responsibility towards

environmental sustainability and did not inadvertently promote harmful practices. Throughout informal discussions about global environmental issues, care was taken to avoid imposing personal views or causing ecoanxiety among participants. Having experience in my job, I was aware that discussing environmental problems could cause distress, especially among elderly people. Therefore, I was cautious about this when discussing environmental problems with respondents and other school staff, as well as during a presentation class about environmental protection that I delivered to Year 6 students. Moreover, efforts were made to minimise the environmental footprint of the study by limiting travel and avoiding the use of cars, instead using public transportation or walking when schools were nearby. Paper usage was minimised by sharing transcripts with teachers electronically, and note-taking was done digitally where possible.

CUREC ethical review covering all the issues stated above has been submitted to the University of Oxford's Ethical Committee.

Chapter 4. Jamila

Jamila was one of the five participants in the study, with nearly 17 years of teaching experience at the time of the research. She was among the few teachers who taught geography across all grade levels from 6 to 11. Additionally, Jamila graduated from university with distinction and earned one of the highest scores (59/60) on the school's Diagnostic Assessment Exams (DAE).

This chapter is structured to address the research questions systematically. Research questions 1 and 2 are examined in Section 4.2, which includes two subsections and six categories. Each category is based on the discussion of stated and observed beliefs: first, the stated beliefs about the environment is presented, followed by the enacted beliefs related to the same category. Research questions 3 and 4 are addressed in Section 4.3, which is divided into three subsections, following the same organisational approach as used for the earlier research questions.

While exploring Jamila's stated and observed beliefs about the environment and teaching about the environment and how her stated beliefs were enacted in her classroom practice, several key insights emerged, including:

- Jamila believed the environment to be physical and cultural; the key themes that emerged as a result of data analysis about Jamila's beliefs about the environment were utilisation, preservation, restoration, cultural, religious and romantic beliefs; Jamila was the only one for whom cultural, as well as religious beliefs about the environment held an important place within her belief system; her stated beliefs about the environment and her observed practice were mainly consistent (research questions 1 and 2, section 4.2.).
- The key themes that arose in the analysis of the data regarding Jamila's beliefs about teaching about the environment were her teaching focused on delivering knowledge about the physical and cultural environment; she prioritised knowledge delivery through indirect teaching approaches; her stated beliefs about the environment and her and observed practice were mainly consistent (research question 3 and 4, section 4.3.)

Throughout data analysis, some abbreviations are used referring to the location of the data provided by the participants: BI – background interview, FUI – follow-up interview, FI – final interview, CO – classroom observation. Also, as the number of recall interviews and observations was more than one, these abbreviations can be followed by a number indicating the number of recall interviews or observations (e.g. RI3, CO2).

4.1. Personal and Professional Background

Family. Jamila's first memories of learning about the environment and nature came from her childhood before even starting formal education. Her first impression of the importance of preserving the environment is the experience of sharing their kitchen with two oak trees reaching the sky:

> We lived in a kitchen with two oak trees for many years. My father built our kitchen without cutting down two giant oak trees that were right in the middle of our kitchen... We loved having these trees at our house; they were like family members... (BI, p. 14)

She was brought up in a family where all her siblings majored in economics, where geography was one of the leading disciplines in the field. She remembers her first acquaintance with the world map and how her brothers taught her about the geographical locations of the countries, mountains, rivers, trees, etc. By the time she started school, she knew almost every inch of the world map, the countries and their peculiarities.

Formal education. Jamila's earliest memories of learning about the environment at school came from her secondary school Geography classes. She remembers her geography teacher with great affection, who was the main influencer in her life to become a geography teacher. Jamila described her geography teacher as a person who was in love with her subject, loved nature, taught with great patience and cared for and respected students.

> I could be a history teacher as well, I loved history subject very much... But I did not like my history teacher. But, I was in love with the geography teacher. When I was still in 7th – 8th grade, I made my decision to be a geography teacher. Generally, the teacher-student relationship plays a great role at school. Teachers' love for students and students' love for teachers is important. If there is no love, you are not a teacher… (BI, p. 2)

Jamila did not have any outdoor classes during geography classes and she related it to the absence of school requirements, curriculum and overall the education system they had at that time. However, she mentioned that they had "field trips" during school years, that were organised by local authorities - the students would go to the fields for cotton and grape harvesting[1] at a certain time of year and this was the time filled with joy for students as they were free of school responsibilities. Besides, Jamila remembered "imajlik[2]" where the main activities were waste collection and tree planting. However, to Jamila, more than environmental activity, the students saw it as a social activity when they had time to build a close relationship with their classmates.

[1] During the Soviet period state workers, university and high school students were sent to cotton fields to gather cotton and the "tradition" lasted until the collapse of Soviet Union in 1990s (Blackburn, 2021)

[2] Imajlik is a requirement for all public schools and every year at the beginning of each academic year the dates and time of imajliks are included in the school's events plan.

Place-based love. Jamila was born and brought up in the Kurdamir[1] district, known for its unfavourable hot weather conditions and limited recreational resources. However, despite this, Jamila loved her native town and stressed that Kurdamir instilled in her a love for nature. She liked Kurdamir which has been described by the populations of other regions as a place "not worthy to live" because of its arid climate. Jamila described Kurdamir as the area located on the ancient Silk Road and as one of the cradles of ancient culture. She described trees on the bank of the river Kur, storks she admired that built their nests on top of high buildings. She added that storks build their nest in areas where the weather is clean and full of oxygen, indicating the impressive nature of her district.

Jamila loved not only her native town, she visited different parts of Azerbaijan to get acquainted with nature while enjoying it. She joined travel groups where she visited different regions to explore their nature, historical places and places of interest.

Professional background. Jamila worked at a school in Kurdamir district for two years, at the school she studied, before coming to the school in Keshla where she has been working for 19 years now. It is one of the public schools and she perceived the school to have average facilities due to a lack of technology, internet, smart boards, etc. The building was located right in the heart of Keshla, very close to oil tanks and refiners. The territory of the school is bordered by plants like bitumen, glass, concrete, plastic bags, oil refiners, etc. and is close to the Shangai part of Keshla.

Jamila has worked at the school in Keshla since 2005 teaching geography to students from 6th grade to 11th grade. Recently, she started to teach the life skills subject[2] that covers topics related to the environment as well. She perceived both schools she taught to lack environmental education culture and a limited number of activities were organised related to the environment (BI).

She never openly complained about school authorities during interviews or observations. However, she revealed her disappointment during our "informal" meetings as it seemed she perceived school administrators not valuing her professional development and achievements. Her teaching load was close to the same or lower compared to other geography teachers at school, while according to the regulations, teachers' performance during DAE is one of the major indicators in identifying the

[1] Kurdamir is the hottest district of Azerbaijan located in the Aran Economic Region, characterised by its dry subtropical climate where the weather tends to be hot, sometimes extremely hot during summers.

[2] Life Skills is an integrative subject introduced in the 2004/2005 academic year and is taught in primary (I – IV grades) and secondary (V – IX grades) education levels.

workload of teachers. It was the main reason she refused tutoring[1] and never asked for tailored scheduling[2] (BI).

4.2. Beliefs about the environment

During data analysis of the background, recall, final interviews and observations, different aspects of Jamila's beliefs about the environment were observed. The data suggested that humans seemed to be at the centre of Jamila's environmental belief system: through utilitarian, restoration, preservation, cultural, romantic and religious relationships with the environment, she seemed to hold anthropocentric beliefs where at the top of the hierarchy she placed humans and God. Some of these beliefs were more explicit (utilisation beliefs, restoration beliefs and preservation beliefs) giving way for a clear discussion, while some others were more latent (cultural beliefs, religious beliefs and romantic beliefs) and open to interpretation. In the following subsections, Jamila's beliefs will be analysed in detail.

4.2.1. Environment as physical surrounding

4.2.1.1. Utilisation beliefs – Environment as a resource

In Jamila's understanding, an environment is a place that provides resources for human life. She seemed to believe that humans are part of the environment and depend on material resources that constitute their environment (BI). To Jamila, natural resources are essential for the survival of humanity. For this reason, humans are meant to use its resources, at the same time, Jamila believes that humans are an inseparable part of the environment and play an important role in its existence:

> Natural resources provide us with our basic needs… with food, energy, and raw materials for the production of goods… it is a natural process… Also, there is a concept of a 'food chain' where primary consumers are vegetarians followed by secondary consumers – meat eaters. It is like a cycle where energy is transferred from one organism to the other… As part of nature, humans occupy an important place in the food chain… (BI, p. 13)

The passage shows that Jamila had a pragmatic view of the environment and its resources. She felt confident about people's right to use natural resources by saying "the major function of natural resources is to serve people" (FUI1, p. 2). She considered taming animals, making use of their milk, and meat, and cattle breeding as positive actions (BI, p. 7).

Jamila's utilisation beliefs were more noticeable during in-class practice. While teaching year six about different types of forests (CO1), she discussed with the students the importance of tropical rainforests and concluded that they are not very useful for

[1] Nearly all teachers are expected to supervise a class. Usually, they prefer to supervise the class as soon as students are transferred from primary to secondary school in the 5th grade and continue the supervision until they graduate from the school. It is added to their salaries, as teachers with a class to lead are entitled to get a higher salary compared to a teacher with no tutoring.

[2] At the start of each academic year teachers' preferences for lesson schedules are taken into consideration. It is discussed during an informal conversation, very often teachers who have caring responsibilities are given priority.

humans to live in those forests due to the humidity and dense canopy of the trees that prevent sunlight: 'No humans live in equatorial forests because the dense tree canopy blocks sunlight and creates an extremely humid environment' (CO1, p.1).

However, she stressed the usefulness of coniferous forests:

T. … in Ukraine, and Belarus there are coniferous trees on one side and broadleaf trees on the other… How do we use these trees?
S. In making furniture, papers…
T. Have you watched the Russian cartoons "Ivanushka", "Zoolushka"?
S. Yes
T. … You can see them eating, drinking… What are their dishes made of?
S. Wood
T. Why? Because their life is adapted to that environment… Their traditions are adapted to the forest as they live in there. Even in the old Russian movies the plates of Tsars'[1] were wooden. In Europe, in Russia, you can see little houses made of wood… So can you say what the advantages of the trees are?
S. we make dishes, houses
….
T. We use them in construction, how do you think we get materials for floors, for ceilings? They are made of wood… What about tables and chairs? Again wood… even these (the teacher shows desks) are made of the bark of trees. Papers, notebooks, textbooks – are all made of wood… (CO1, p. 1-2)

Beliefs she held during interviews were accordingly put into practice during class teaching and seemed to be evidently reflected in her practice as a recurring theme.

However, she did not seem to feel positive about the consequences of human actions all the time while using its resources. When Jamila was asked about the relationship between humans and the environment, she stressed the negative effects of human actions on the environment:

We make reservoirs to store drinkable water… or we make artificial lakes for fishery… but we don't think about the consequences… we have Mingachevir reservoir[2]… It is above sea level… and it is built close to Kur-Araz Lowland[3] which is below sea level... because of its vast area the reservoir doesn't have a concrete lining which makes it possible for the water to leak... what happens? The level of groundwater rises… as the water coming to the surface evaporates, the salt will remain beneath… obviously, it increases soil salination… (BI, p. 8)

The data provides insight into Jamila's awareness of environmental problems caused by humans while using its resources. She understands the fragility of the environment and the importance of its protection. She is aware of the negative impact of human behaviour and calls for action:

[1] A tsar, also spelled as czar, was the title used for the emperors of Russia, particularly before the Russian Revolution of 1917.
[2] Mingachevir reservoir is the greatest reservoir in Azerbaijan, with an area of 605 km^2 located about 300 km west of Baku, Black City district. It is above sea level for about 71m.
[3] Kur-Araz Lowland is the biggest depression in Southern Caucasus, with an area 22500 km^2. It is located about 100 km southwest of Baku's Black City district. It is below sea level for about 28m.

> If we are entitled to have 2l of water a day, what can happen if this amount exceeds 2l and becomes 5l? how long we can stand it?... the environment is overloaded… we urgently need to come up with reasonable and visible solutions… (BI, p. 12)

Environmental awareness was reflected in her beliefs about the ethical dimension of using resources as well. Jamila shared her views on raising our students in the spirit of nature and instilling environmental responsibility in the younger generation: "They shouldn't take it for granted, instead have to learn to be grateful for what nature has given to us" (FUI2, p. 1).

Jamila's comments on the utilisation of resources shed some light on her concern about the management of resources:

> We may use resources of the environment, but have to make sure not to overuse them… The use of natural resources should be controlled, if there are ten deer in a certain area people should be allowed to hunt two of them. It should be legal and people have to know their limits. (BI, p. 14)

During the final interview (p. 7), Jamila mentioned the importance of recycling which indicates her resourcist beliefs. She believed we need to make good use of pollutants because it was a more reasonable way of using resources.

> You remember, during one of the classes I talked about waste management… in some countries incineration method is used… but it is very harmful… it contributes to air pollution… the best way is recycling… fertilisers, biodiesel, bioethanol can be produced that can be effective in several ways… (FI, p. 7)

During classes, she urged students not to be passive observers of the recycling process and not to think of their involvement as "not worthy" and informed them about what their contribution can be to the recycling activities:

> Have you ever collected maklatura[1] at primary school? Old books, notebooks… Do you know why they are being collected? They are recycled and made into new books and textbooks… we wouldn't need to cut down the trees if we used more recycled papers… (CO1, p. 3)

She strongly believed in keeping an equal balance between using natural resources and protecting the environment which I discuss in 4.4.1.

4.2.1.2. Preservation beliefs

Jamila used various examples to emphasise the need to protect the environment. She saw protection as important as restoration because there would be less space for restoration if we were not capable of protecting the environment. Jamila's protection beliefs were intertwined with her beliefs of collaboration to promote the protection of the environment. To her, the key to success in this process is collaboration. She noted society, parents, schools and teachers have to come together to raise environmental awareness and nurture environmentally friendly behaviour (BI, p. 6). This works well,

[1] Maklatura is a Russian word for waste paper

she explains, because it enables you to see everyone striving for a shared goal and increases efficiency (FI, p. 4).

To Jamila, humanity should not be divided by national borders when the intention is to conserve the environment. She thinks the environment is home for all human beings:

> One hand makes no clapping. It is a “common house” for all, and everyone has to share the responsibility. We have to work together to succeed. Environmental problems are not my or your problems, they are global challenges. If something happens in Iran, we cannot keep silent, thinking it has nothing to do with me. Iran is our home as well… (BI, p. 10)

> Though it happened in Ukraine, we were also affected by the Chernobyl disaster. The price of imported products from Ukraine considerably decreased due to radioactive contamination and we continued to import those products from Ukraine. We cannot rest assured that if something happens in China, it will have no impact on us… The virus in China spread around the world. We have to protect China, Latin America, Northern America, Europe, more naturally, the place we live in… We have to do it together… (BI, p. 10)

The rationale behind Jamila’s preservation beliefs is related to future generations. She extensively stressed the importance of human life and the effect environmental issues could have on it. She mentioned the importance of protecting the environment to make it “to exist” for future generations. The future of our children depends on us, the way we influence the environment, in that same way it will respond to us, she explains.

> We need to protect the environment for future generations. It is our historical heritage. There are threatened species, we may see them only in the Red List. Or there is an extinction risk of thousands of species. We have to protect them… Can you imagine what can happen if so many species become extinct? Imagine the world without this species, it would be empty… How can it be? It is like a man without clothes… (BI, p. 11)

During class observations, Jamila’s thoughts about protecting the environment seemed to cover two different but closely related themes: conservation and preservation.

According to Christ & Dreesmann (2022), conservation can be perceived as a dynamic process involving considerate management of the environment while preservation has more of a static connotation – keeping nature in its original state. That may be understood as both preservation and conservation beliefs are about protecting the environment and preventing it from damage. However, within conservation beliefs, there is a space for the usage of natural resources but in a managed way.

There is not always a clear definition of the differences between preservation and conservation. Kay Milton, in her book ‘Environmentalism and Cultural Theory’ (1996) defines environmentalism as “a concern that the environment should be protected, particularly from the harmful effects of human activities” (p. 27). She further reveals the meaning of ‘protection’ as “protection of the environment through human effort and responsibility” (p. 33) which she argues is reflected in the assumptions and values of the

society. Here 'protection' is used as a single term which brings together both preservation and conservation.

Jamila did not clearly state the difference between preservation and conservation, also there is only one word in Azerbaijani '*qorumaq'* which is used in both contexts. However, Jamila's protection beliefs seemed to be enacted in two ways during her classroom practice. Jamila discussed with students how to clean polluted seas, rivers and lakes (CO3, p. 7). The example of the Caspian Sea polluted with oil was familiar to nearly all students, as the city where the school was located was at the shore of the Caspian Sea and colourful oil on the surface was observable from a short distance. Conservation beliefs were observed while she was talking about water shortage and the ways of saving water.

T. What can we do to tackle the drinkable water problem?
S1. To make salt water drinkable…
S2. Desalination of ocean water…
S3. Drilling artezian wells…
S4. Using icebergs…
T. Yes, what else? … what about saving water? Very often, we leave the faucet open… The best way, I think, is to use water very sparingly… (CO3, p. 3)

… Recently you may observe synthetic materials are used in construction, like laminate flooring… this may prevent trees from cutting down… (CO1, p. 3)

In the passages above, conserving the natural environment – water and trees was the primary focus of discussions.

Jamila was also concerned about protecting the "historical" environment. If we think of historical artefacts as part of the environment, it is worth thinking about which term better reflects their protection. If we aim to protect historical monuments in their existing shape without attempting to change them, in this case, I think the term preservation expresses its true essence and appears to be part of Jamila's broader belief system. She referred to different historical places in Azerbaijan – Icharishahar[1], Azykh Cave[2], Gobustan Rocks[3] stressing the importance of exploring, preserving and delivering them to future generations intact (CO5, p. 6). She linked historical places with recreational resources, stating around these historical places, nature should be beautiful and services should be of high quality to attract tourists (CO5, p. 7).

Though preservation beliefs are generally associated with ecocentric beliefs, the "historic environment" is the reflection of humanity – they are made by humans. Comparing human creations with non-human natural entities, Katz (1993) states that "artefacts are evaluated solely by their instrumental and anthropocentric use, while natural entities can be appreciated for their independent and autonomous existence" (p.

[1] Icharishhar which literally means "Inner City" is the oldest part of the capital Baku and was included into UNESCO's World Heritage List.
[2] Azykh Cave with 350-400 years of history was discovered in 1960 in the territory of Azerbaijan.
[3] Gobustan Rocks with 15 thousand years of history is located close to the capital Baku and was included UNESCO's World Heritage List.

223). While artefacts serve human purposes, natural entities exist independently without being linked to human well-being (ibid.).

The chain here is quite interesting – preservation (ecocentric belief) of historical artefacts (which is human-made) reflects how closely beliefs are intertwined here if we perceive the environment as more than nature. I will discuss how Jamila's ecocentric beliefs were nested in her broader anthropocentric belief system in sub-section 4.4.1.

Jamila believes protection - preservationism and conservationism should not be considered a means to replace restoration activities. The restoration approach was among her beliefs about the environment, which I will note in the following subsection.

4.2.1.3. Restoration beliefs – A man in the forest

Besides acknowledging the massive damage humans have caused to the environment, Jamila also saw humans as capable of restoring nature. Mellor et al. (2022) define restoration as "the process of assisting the recovery of natural environments that have been degraded, damaged or destroyed" (p. 541). This definition of restoration was reflected in Jamila's beliefs, who thought nature would restore itself if there were no human involvement, but now a lot depends on humans (BI, p. 15). For this reason, humans should not take just a "non-participatory" approach to the environment (BI, p. 11). To Jamila, an old Azerbaijani cartoon "A man in the forest" reveals the essence of humans as "restorers".

> There is an old Azerbaijani cartoon – A man in the forest. There is a scene where the wolf running warns all the animals that a man is coming into a forest and he will destroy the forest… The rabbit hides her cub in a tree hole, the bear collects all the pears screaming there is a man in the forest… but when all the animals are in high alarm, we see quite a different scene than expected… the man waters the flower that is drying out.. puts a bandage on the broken wing of the bird… That means a man came to the forest not to destroy but to restore it… (BI, p. 6)

To Jamila, the message of the initial scenes of the cartoon "A man in the forest" is that there is a perceived human character by the forest animals – the man is coming to destroy the forest. In reality, the perceived negative character of humans is not by animals but by humans themselves. By stating that with the words of animals, she not only acknowledges the negative impact of humans on nature and reveals humans' inner character linked to the environment, but also sends the message that we – humans are aware of our negative impact and notes the importance of restoring nature as a man did in a cartoon and humans' capability of doing that.

Being very conscious of this, Jamila wanted to make sure every student knows about the ways of restoring nature by informing them about soil reclamation, the ways of preventing salination, removing harmful pollutants from industrial waste, and reducing the amount of synthetic fertiliser usage (BI, p. 15). Moreover, she indicated the relationship between livestock, pastures, an increase in carbon dioxide and desertification and indicated the importance of restoration:

> Animal husbandry has developed over the years, pasturelands have gradually decreased… it leads to an increase in carbon dioxide and the spread of desertification. More carbon dioxide causes the climate to warm, and that warming contributes to the expansion of deserts… we need to be careful when we harm the environment, we need to restore it (BI, p. 8)

Jamila's commitment to environmental restoration was evident in her instructional methods, where she constantly referred to the importance of restoring the environment. While discussing with students the water resources, the consequences of pollution and the importance of restoration were emphasised by Jamila:

> There are specialised vessels that move slowly and cleanse the water's surface. Oil is lighter, it remains on the surface. This means we can utilise such devices to effectively remove oil from water. If we don't have these devices, we can buy them. We could clean the Caspian Sea of harmful pollutants. (CO3, p. 7)

The paragraph above reflects the teacher's concern for protecting water resources from pollution. Practical solutions and proactive measures proposed by Jamila resonate with her restoration beliefs of taking action to preserve and restore natural ecosystems.

A similar belief was reflected when Jamila spoke about rivers when she stated 'polluted rivers do not evaporate...' (CO3, p.2) indicating the importance and urgency of protecting and restoring water resources to maintain ecological balance. Moreover, Jamila spoke to the students about the close interdependence between humans and the natural environment by highlighting the consequences of deforestation: "If we destroy the forest environment, if we cut down the trees, the living creatures there slowly disappear too because the habitat they need to survive is being destroyed" (CO1, p. 2). It reflects an understanding that forests are not just collections of trees but vital ecosystems that support a wide range of living organisms.

Restoration of the environment was also part of Jamila's beliefs about teaching about the environment which I will discuss in subsection 4.3.1.

4.2.2. Cultural environment

4.2.2.1. Cultural beliefs – Place of identity

Alongside utilisation, preservation and restoration beliefs, the environment carried cultural meanings to Jamila. The examples she brought from her teaching about the environment during geography classes represented diverse cultures from different continents. Jamila seemed to believe that environment and culture are closely linked, environment is a setting where cultural processes develop and where cultural identity evolves. By referring to different cultures, she seemed to suggest that these identities - cultures are an inseparable part of the world and draws attention to the importance of being aware of them.

The examples Jamila brings from her own cultural background imply her thinking of the link between the environment and culture. She showed her appreciation for the

environment she was brought up, which she believed was very important in shaping her identity (BI, p. 2). Throughout the data collection period - during BI, COs and RIs, as well as during tea and lunch breaks, she often referred to the "general" idea among our people about Kurdamir – her mother town being a place with less convenient living conditions. She strongly rejected the idea of "her region" with an inconvenient climate. Still at the university, she had a long debate with her teacher about it:

> My teacher asked me "how do you live? it should be very hot there…" my answer to him was that Kurdamir historically was located on the ancient Silk Way… with the merchants from China, India and other countries passing through Kurdamir we had cultural "exchange"... Kurdamir has always been in the spotlight… After a long "speech", my teacher said "now I want to live in Kurdamir…" (BI, p. 3)

The passage above shows that the term environment was not limited only to geographical location and weather conditions, moreover, to Jamila, it reflected cultural factors being a hub for cultural exchange. Jamila had a similar conversation with several people where she noted the importance of their "cultural environment" which she seemed to believe had a large influence on the development of societies. She noted merchants travelling through different countries at that time that brought their cultures to this region as they were key figures in this cultural exchange.

Jamila's reference to the Silk Way several times during our meetings indicated her salient beliefs about the links between the environment and culture. Historically, the Silk Way connected people and cultures, it was not only a way to exchange goods but, more importantly, contributed to the exchange of ideas and cultures.

Jamila integrated her cultural beliefs into her teaching practices, conveying the cultural aspect of the environment to her students through various strategies and activities. Given its close intertwining with her approach to teaching environmental topics, I elaborate on this aspect in section 4.3.2.

As part of her cultural beliefs, Jamila also held religious and romantic-aesthetic beliefs related to the environment, which are considered elements of culture (S. Carter, 1997) that I will discuss in the next subsection.

4.2.2.2. Religious beliefs – Moral values

The association between Jamila's religious views and the environment seemed to be a subtle but profound aspect of her belief system. Religion is considered a part of culture (e.g. S. Carter, 1997; Milton, 1996) and studies suggest that environmental understanding may be influenced by religious views (e.g. Peace et al., 2012). For this reason, I have added religious beliefs as a subsection of cultural beliefs.

During interviews (background, recall, final) and observations, it was observed that religious beliefs affected Jamila's perception and teaching about the environment. Throughout the case study, she often referred to Islam and brought examples where she

related religion, the environment, and environmental problems. She saw her knowledge and love for nature as a gift that God had graciously granted her (BI, p. 1) and related her understanding of the environment to her religious beliefs.

> Environment is the house we live in. The way we treat that house, it treats us back the same way.. like a boomerang.., if we enter the house with positive feelings, we will live in it with good memories… It is reflected in our religion... Our religion taught us to say "salam[1]" even if there is no one at home.. it sends good vibes and creates a relaxing atmosphere… The same attitude should be expressed towards the environment… (BI, p. 8)

This passage helps to illustrate a few of Jamila's environmental and religious beliefs and the link between the two. She made it clear that religion is the reflection of her values - it influences different aspects of lifestyle, fosters habits and shapes the moral foundation for protecting the environment. Her example of saying "salam" even if there is no one at home implies her overall positive attitude towards protecting the environment – we need to preserve the environment without any conditions attached to it.

Besides, as it can be observed from the passage above, for Jamila, religion fosters moral values and it seems her moral values cover the relationship of humans to the environment as well. When she expressed her dedication to the values of conservation and environmental responsibility, she also indicated the importance of her role as a teacher in cultivating environmental awareness: "society, parents, schools and teachers have to come together to raise environmental awareness and nurture environmentally friendly behaviour" (BI, p. 6). While her message was that every individual – teachers, parents, schools, as well as society, must have the responsibility to preserve the environment, she also expressed her concerns about the loss of moral values by stating that "values were more 'valuable' in the older generation compared to the younger generation now" (RI, p. 4).

During class observations, Jamila's religious beliefs were more salient. She thought of God creating everything for humans – for their well-being and health. Jamila thought of the sun, sand and sea created by God for humans, as a source to improve our health.

> God sends us a sufficient amount of ultraviolet radiation, it is good for human health as it triggers vitamin D and strengthens bones, muscles and the body's immune system (CO3, p. 10)

Jamila refers to her religious beliefs while talking about environmental problems:

> Ozone holes over Australia and Antarctica are a sign of God's warning people to be cautious about the environment and take care of its resources because all these were given to us by God… (BI, p. 12)

[1] Salam is an Arabic word which means peace and used as a general greeting word by all muslim countries. It can be used as "As-salamu ʿalaykum" which means "peace be upon you" or as full version – "as-salamu ʿalaykum wa-rahmatullahi wa-barakatuh" meaning "peace be upon you, as well as the mercy of God and His blessings."

Her statement reflects a perspective where environmental issues, like ozone depletion, are interpreted through a religious lens and, as in many religious traditions, advocate environmental responsibility. It was also reflected in her approach toward natural resources. Bringing examples from different religions, she stated that "we take "dast namaz[1], Christians are baptised with water, in Buddhism water is an important part of religious rituals…" (BI, p. 15), the river Gang is considered the most sacred to Hindus (CO3, p. 7). To her, water – a vital natural resource, is considered sacred in all religions as a symbol of purification, believing that harming nature and natural resources is a moral and spiritual failing.

4.2.2.3. Romantic-aesthetic beliefs – Beautiful nature

Jamila saw the environment as beautiful, as a place to enjoy and find a sense of peace. To her, nature is a source of beauty that brings peace. Jamila's imaginary picture of the environment starts with the mountain, which is a sign of freedom for her:

> The environment is where you see mountains. I love mountains; they reflect "rise", no boundaries... The environment is when you have "yaşıllıq[2]" on the slopes... It is green alpine meadows... It is a river running through a valley at the foothills... It is a scree close to mountains and rivers... Butterflies... Grazing sheep... The environment is the feeling of calm, peace, tranquillity… (BI, p. 10)

She further adds:

> Just have a look at the trees in front of my house (the teacher shows a video on her phone where a number of plane trees stand tall, and the wind moves their leaves silently)… I moved to this house because of these trees. I have nearly no furniture in my house, no chairs to sit on, no table… but I have the view of these trees… I didn't hang any curtains on my windows to see these trees… Being surrounded by green trees makes me happy, lifts my spirit… (BI, p.17)

During classes, she elaborated more on her feelings about trees. Besides the look of the trees, Jamila loved the sound of leaves: "during a slight breeze, the rustling of leaves brightens your mood, decreases stress" (CO6, p. 6). Jamila's perception of trees was not just by sight but through another sense – hearing.

It was interesting to see Jamila talk about the hydrosphere differently and start her conversation with its aesthetic value instead of stressing its functional value.

> The hydrosphere is like a cloth of land, its decoration... It is like a precious stone of a ring… Imagine there are holes in the oceans instead of water… how ugly would it look… I mean its physical appearance… besides, water is the source of life… (CO8, p. 3)

Jamila sees the environment not only as a place and as objects in it. She experienced the environment in a multi-structural way. She attached emotional meaning to it. To her, mountains, trees, meadows, rivers, insects, animals are all components of the environment and help humans find inner peace, they are reflections of serenity. Jamila brings together all the components of the environment, including humans, stressing the importance of human-nature harmony. Referring to the complex relational

[1] In Islam, before praying people must take dast namaz, which is an act of washing hands, arms and feet.

[2] Yaşıllıq means a sum of all green trees, grass, shrubs, bushes that is located in a certain area.

view between humans and the environment, to Jamila, “coexistence” is the door to peace of mind. The relationship between the environment and humans is mutually bounded and depends on one another: “if we treat the environment well, it will treat us the same way”, she adds (BI, p. 9).

Within Jamila’s romantic beliefs, a feeling of guilt seemed to be embodied in her beliefs – guilt for modifying nature. While teaching students about tropical rainforests, she said:

> Children, look at the ficus plant (the teacher points to the ficus plant right in the corner of the classroom), it is so beautiful… Actually, it is a plant from tropical rainforests… The plant we grow inside a classroom is a tree of nearly 60m in height and with broad evergreen leaves… It can’t adapt to this environment and that’s why they remain that short… (CO1, p. 1)

The sight of plants in the classroom gave Jamila aesthetic pleasure. However, she appeared to express sympathy as if humans were to blame for changing the plant's location and depriving it of its beauty. While talking about the deforestation of Amazon rainforests, she mentioned that “the beauty of the environment is relatively reduced and humans are responsible for that” (CO1, p. 2). Feelings of guilt towards the environment were continuously expressed throughout interviews and observations while referring to human damage to the environment.

Moreover, she attached social meaning to the environment by saying “we used to have outdoor activities like hide and seek, jumping rope, rezinka[1]”. Environment is a memory of her childhood, a place to socialise and play. She complained about people, noting that now people avoid communication and human-to-human interactions have been extensively decreased due to the development of modern technology (BI, p. 10-11).

However, it seems Jamila’s ideas about technology were not consistent. She had differing views about the role of technology in humanity. On the one hand, she appreciated the advancement of technology, thinking it could help us to overcome natural disasters, as it has been noted above, on the other hand, she wanted to be back in a world where there was no technology and where people were eager for face-to-face interactions. It seems technology may have two connotations: positive and negative. Jamila supports the positive side of technology while being conscious of its negative effects.

Besides, the environment reflects “naturalness” and “simplicity” to Jamila. Though she stresses the importance of industries in human life she prefers her “genuine” environment to be free of artificiality. Artificiality, coming with new technology,

[1] It was a game played extensively several decades ago by children in my country with at least three players: two holders of a rubber band and one jumper. Holders would hold the rubber at their ankle level, and a jumper had to jump following a pre-established sequence of patterns without touching a rubber. If they do not do a mistake the rubber band is raised to the calves, then kness, finally to the waist level. In some countries, the game is called Chinese jump rope or French skipping.

influenced interactions between humans as well as between humans and nature. Decreased relationships with the environment resulted in the dominance of technology over nature and led humans to lack the peace that they need for mental stability.

> Over recent decades, the amount of artificial food and GMOs has seen a considerable rise. Unhealthy products are one of the reasons of negative attitudes and pessimism. All these cause health issues. The immune system weakens and the self-defence system of the human body does not function very well… Very often, people are in a low mood or in depression... (BI, p. 10)

Being in an environment is peace, avoiding the environment is depression to Jamila.

4.3. Beliefs about teaching about the environment

Jamila's beliefs regarding teaching about the environment reflect knowledge sharing and behaviour change promotion. Her espoused belief emphasises that environmental education should begin with an intimate understanding of the local context:

> First of all, learning about the living environment. Where do these kids live? The impact of people on the environment and the environment on people. The living environment comes first… The kids live there, so for them, that's the best example. Then, of course, we learn beyond that local environment - about the country and then to the world… if they don't know anything about where they live, how can they learn about others? (BI, p. 17-18).

This extract underlines her belief regarding grounding learning in the students' immediate surroundings to facilitate a deeper connection to the subject matter. Moreover, Jamila further highlighted the importance of integrating visual materials to enhance understanding:

> Last week, our lesson was about the angle of sunlight. I told the kids, 'There's this cartoon… the dog says, I grew up in the morning…' I try to encourage them, go watch things like that" (BI, p. 6).

By incorporating diverse media such as photos, videos, cartoons, and movies, she believed she not only reinforces the content but also supports varied learning styles, making abstract concepts more tangible.

This belief about contextual and multimodal learning is mirrored in her classroom practices. For instance, when discussing water pollution, she started with the local example of the Caspian Sea before extending the discussion to global issues:

> So, what were the main sources of pollution in the Caspian Sea? Waste carried by rivers like the Volga, Ural, and Kura basically, the rivers that flow into the Caspian. Where did most of the Kura River's pollution come from? Georgia… Because the Caspian is so polluted, during spawning season, there are oily and gassy substances on the water's surface. That prevents the water from being fully oxygenated and stops the fish from being fully active. And that, in turn, harms their ability to reproduce and lay eggs. Besides Azerbaijan, heavy pollution is also found along the shores of Kazakhstan, Iran, and Turkmenistan (CO3, p. 1)

Additionally, the use of visuals to support this shared knowledge was routinely observed in her classes (see sections 4.3.1 and 4.3.2).

Moreover, Jamila believed promoting behaviour change is equally important. She actively involved students in discussions and activities designed to nurture environmental responsibility:

> You might remember, when you were sitting in my class, I told the kids, 'Let's do something like 'Do not litter, clean', writing something on the doors, putting messages on the floorsş' They got so excited about it…" (BI, p. 6).

Her reference to an old Azerbaijani cartoon noted above (p. 129) was one of the examples of promoting behaviour change by challenging and reshaping students' perceptions of human impact on nature.

Observed classroom practices further demonstrate the alignment between Jamila's stated beliefs and the behavioural changes she promotes. During a discussion on environmental protection in Azerbaijan, the teacher engaged the students in a dialogue that linked shared knowledge with practical actions:

> T: What suggestions can we make to help protect the environment in Azerbaijan?
> St1: Developing the non-oil sector...
> St2: Using nature without polluting it...
> T: Well done. Earlier I mentioned an idea you all liked, what was it?
> St3: Everyone should plant a tree.
> St4: When people get fined, they should have to plant a tree!
> T: Yes, planting trees, planting flowers... (CO5, p. 8).

This dialogue between Jamila and her students reflects her belief that knowledge about the environment should be translated into proactive, positive behaviour.

Regarding how to teach, Jamila employed a variety of instructional methods and strategies to deliver knowledge and promote behavior change that were mainly consistent with her observed beliefs. Throughout interviews and observations, Jamila frequently cited and used different sources of knowledge such as books, documentaries, movies, cartoons, videos, and photos which could be gained by students through the use of a variety of indirect, interactive and visual aids, including discussion, debates, presentation, role-playing and independent student investigations: 'We can have role-playing activities... For motivation, I could show a video clip from a movie about environmental pollution' (BI, p. 18). Additionally, she emphasised the importance of encouraging students to conduct their own research and engage in artistic expression, such as painting pictures. Most of these methods were observed during classroom sessions. However, it's worth noting that while Jamila mentioned 'I do a lot of outdoor classes' (BI, p.5) in interviews, this particular approach was not observed during my study. Also, during classes, I observed debates and an environmental exhibition organised by Jamila that were not noted during the interview. Teaching approaches adopted by Jamila are discussed in the following sections.

4.3.1. Indirect learning: visualising physical environment

During the background interview, Jamila often provided retrospective accounts of her teaching practices where she referred to different activities and visual tools while

teaching about the environment. She believed not only the content but also instruction, learner involvement and activities were important while raising awareness about the environment.

I usually plan to teach topics such as environmental pollution as an 'opposite connection'. I tell students our next topic will be about the protection of the environment. Do your own research, use the internet, print out some materials... During class, I typically use pictures or short videos about our city and region, then we expand our discussion from our country to the world. Textbooks are very limited. Students need to learn everything about the environment to be able to protect it." (BI, p.18)

While in the classroom, she used different pictures to teach students about the human effect on nature. In one of the observed classes, she showed the image of a man's foot with flowers under the shoe (Figure 18) and asked students what they saw in the picture and how they would interpret it. The discussion between the teacher and students covered the idea that the picture's empty background stresses the contrast between what humans did and what they are capable of doing, between past and future attitudes and the modern generation as a bridge to connect them.

Figure 18.Image of a man's foot stepping on flowers, used by Jamila to prompt discussion on human impact on nature

Jamila's rationale behind using this picture was that most students liked visual aids: they made classes more "colourful" enabling teachers not only to instruct but also to show the consequences of human actions and for students to have a "live" experience of what they hear.

Jamila organised a library exhibition with the participation of students of different classes she was teaching. In the school library, different booklets, fact files, paintings and posters were exhibited under the name "The World with Children's Eyes." The students' handwork calling humans to restore nature was demonstrated as well (Figure 19).

Figure 19. “Məhv etmə, bərpa et!” (Do not destroy but restore). Image from the school exhibition

Inspired by the photo shown to them during class, the two female students in 8th grade made a similar model by adding more meaning to it for a library exhibition (Figure 20).

Figure 20. Students’ model of human-environment relationship. The shoe is covered with a world map which, to students, indicates humanity. Students explained it as the world population is responsible for restoring the environment because we are part of the world

These posters reflected students’ concern about restoring nature which may be stemmed from Jamila’s restoration beliefs. However, this is the limitation of my study as I am not exploring the influence of teachers’ beliefs on their students’ environmental beliefs.

4.3.2. Indirect learning: books, films, cartoons

She used a range of strategies but often referred to books and movies to teach students about a particular society or community. The potential reason for that provided by Jamila was that books and movies improve students' knowledge and understanding of various cultures and help them to explore a "greater" environment - an environment that is beyond the limits of the place they belong (BI, p. 6). The examples of movies she advised students included mostly adventure films such as Robinson Crusoe, The Pathfinder, A Captain at Fifteen - A Captain of Pilgrim Ship, etc. She said, as students have limited options to travel and get acquainted with other cultures, she refers to books and movies. The rationale behind her choice of these movies was that:

They are not just adventure movies, it is a window to the world, the initial encounter with the world… they teach students about the geography of those places, they teach students about nature, habitat, flora and fauna of those areas… They also depict everyday life, traditions, culture, even clothes of people living there… (BI, p. 6)

She believed that knowledge about other continents and countries instils students with the desire to travel and see other "environments" and not see "the other world" as "strange" but accept it as part of the environment as well.

Discussion with students also covered the influence the geographical location on culture through traditions, eating and house-building habits:

T. Have you watched the Russian cartoons "Ivanushka", "Zoolushka"?
S. Yes
T. … You can see them eating, drinking wine, what are their plates made of?
S. Wood
T. Why? Because their life is adapted to that environment… Their traditions are adapted to the forest as they live there. Even in old Russian movies the plates of Tzars' were wooden. In Europe, in Russia, you can see little houses made of wood… (CO1, p. 1-2)

She also discussed with students the eating and clothing habits of different cultures. For instance, she asked students what they would take with them if they went to Dubai or Alaska, what they would prefer to eat there, what eating and clothing differences can be in these two cities and what the major factors creating these differences were (CO1, p. 5-7). In this way, Jamila drew attention to how climate influences nations' eating, clothing and housing cultures, how the customs and traditions of people living in different parts of the world were shaped by their spatial and thermal environment.

T. Have you seen in the movies how people living in tropical forests make their houses?
S. More often, they make their houses of mud, cane, straw…
T. Aha, because they are used to living in hot areas, there is no need to construct a building there… And what about their clothes? What do they wear?
S. They wear leather clothes…
T. Leather?
S. Leaves…
T. Why wouldn't they use leather?
S. because it is hot there… (CO1, p. 4)

In most Arabian countries, you can see people wearing scarves, why do you think? Because there is a strong wind which causes dust storms. While there is a dust storm, they close their nose and mouth with this scarf to protect themselves... (CO 1, p. 6)

Noting "the food that people produce and eat is the most basic expression of both their culture and their relationship to the environment" (Philippon, 2018, p. 6), eating and clothing discussions within the classroom can be considered part of Jamila's cultural beliefs about the environment.

Jamila's views indicate her intentions to help students explore, learn about other cultures as a way to connect to the world around them, understand the world as a whole, be respectful to diverse cultures by accepting them as parts of one whole.

4.3.3. Tensions between beliefs

Jamila's beliefs about global problems and the effect of global problems on the environment seemed to be inconsistent. She seemed to be aware of global problems and stressed the importance of ways of overcoming them during interviews.

She talked about Ukraine and Iran, stressing they are home to us and environmental problems in those countries affect us as they have become global. For example, she said:

We can't say the Ukrainian war has no effect on us, we can't say the explosion nuclear station in Iran has no effect on us, this means these problems have become global (CO8, p. 4)

However, while talking about human activities that could have a potential contribution to global problems, she was more focused on their effect on human health and did not mention if they may have an influence on global environmental problems. For example, while talking about industrial waste, she more often focused on human health, stating that "industries and factories should be established away from the cities" (CO6, p. 6) rather than discussing their contribution to global problems. Her rationale was that even if industries are built away from residential areas, they still impact global problems but, in this case, with less impact on human health (RI2, p. 3). Another example, she had a discussion with students about setting off fireworks in wedding halls and suggested that:

T. They have to be banned in indoor spaces… there is so much smoke after that… and it smells bad… you feel like you will suffocate...
S. Maybe if we use them outdoor, that wouldn't happen…
T. Of course, we can use them in an open space... (CO6, p. 7)

Here, Jamila is talking about the immediate effect of fireworks and again she did not discuss if they have any effect on global problems. Jamila's beliefs of environmental problems seemed to have two meanings: local (with instant effect) and global (with long-term effect). Local environmental problems had a direct influence on humanity while global environmental problems took several steps before they influenced humans: "if

they are constructed far away from living areas, the negative effect can be lessened until they get to people…" (RI2, p. 3).

Moreover, tensions between beliefs and practices were observed due to constraints related to the education system:

> Before teaching about environmental protection comprehensively, it's important to thoroughly teach everything about the environment itself in detail first. Only then can we teach what to do (to protect the environment). Limited time, textbooks... it's not enough. I think more time, like extracurricular activities or something similar, would be very beneficial. Students can be more motivated, and teachers can cover a lot more material (Jamila, BI, p. 18-19)

Though during the interviews, Jamila noted the importance of teaching about the local environment and taking students to the fieldwork, there seemed to be limited opportunities related to the challenges noted by Jamila.

4.4. Anthropocentric beliefs – The Superior Human[1]

During data analysis, it has been observed that Jamila's stated beliefs suggest a strong anthropocentric conception of the environment. A conspicuous sign of it was a reference to humans being superior many times by using expressions like "humans are the most evolved", "humans are only conscious beings", "humans are the most important entity", "the environment is meant to be for humankind" throughout BI, FUO, FIs and COs.

Jamila's utilitarian, restoration, preservation, cultural, romantic and religious beliefs are part of her broader anthropocentric belief system that are closely related to one another. Her beliefs about the environment can be categorised under two sections: First, balanced beliefs – utilisation, restoration and preservation beliefs where she thinks about the environment as a resource to be used by humans and at the same time emphasises the importance of restoration and preservation to keep a good balance of the environment. The second category includes cultural-anthropocentric beliefs – cultural, romantic and religious beliefs where Jamila focuses on more cultural, moral and aesthetic values of protecting the environment.

The excerpt below helps to illustrate a few aspects of the interconnectedness of Jamila's beliefs and how they are related to her broader anthropocentric belief system:

> On my way to school, there was a cow close to the butchery. I knew it would be slaughtered. I took pity on him and said what beautiful eyes it has… Here my colleague said it is meant to be food for humans; it is sent to us by God… She was right to say that, some animals and plants are sent to us as food, and we have to use them but within certain limits… to survive… not more than that, we need to keep golden mean neither give way to mass slaughter nor leave people hungry… (BI, p. 13)

Her thoughts imply the environment as a place containing living things - animals and plants (recourcist beliefs) created by God (religious beliefs) that humans must be

[1] The Superior Human? is a documentary that challenges beliefs about humans being superior over other entities.

cautious not to overuse (balanced beliefs) where the ultimate goal is for humans to survive (anthropocentric beliefs).

4.4.1. Strong anthropocentric beliefs

Jamila's primary concern is keeping an equal balance between utilisation, restoration and preservation beliefs. She thinks we need to use the environment because we are used to living with its resources, at the same time, we need to conserve and restore the environment if we do not want to face the negative consequences of our actions. To Jamila, it is primarily humans that are affected by environmental problems. She relates environmental issues with human health, life expectancy and further stresses the pointlessness of life without humans.

> We see the consequences of global warming… climate change causes hundreds of illnesses… cardiovascular diseases, bronchial asthma… They are the results of climate change… It is not only about global warming… Acid rain, chemicals... as the amount of them increases, life expectancy decline... Moreover, illnesses are on the rise… there is a proverb: a healthy body leads to a healthy mind… If a man is sick, if their mind is not healthy, how they can think about the future, how can they contribute to its development? (BI, p. 11)

She further adds:

> Ultraviolet radiation can be the end of humanity... humans are superior to other living beings... if humans do not exist, nothing makes sense... (BI, p. 12)

> Industrial institutions should not be established close to residential areas… they have a great impact on human health… if they are constructed far away from living areas, the negative effect can be lessened until they get to people… (RI2, p. 3)

She stressed the importance of teaching students about restoration activities such as soil reclamation, the ways of preventing salination, removing harmful pollutants from industrial waste, and reducing the amount of synthetic fertiliser usage (BI, p. 15) because not restoring the environment will have a detrimental effect on human health: "we use a lot of chemical fertilisers today, it is one of the main reasons of water pollution… over time the chemicals transferred to the water influence our health…" (BI, p. 16).

Her beliefs remained consistent during classroom practice:

> Every year, around 3 million tons of carbon dioxide are released into the atmosphere due to natural volcanic eruptions. And of course, this has a certain impact on living organisms - on plants, animals, and humans. But why do we mostly talk about humans? You know, right? Among all living beings, humans are the most superior. In the end, it is all about humans (CO4, p. 2)

Since she believed humans to be superior, and so the discussion in class below seems to show her privileging the detrimental effects of the depletion of the ozone layer on humans:

T. What can be the consequences of ozone depletion?
S1. Warming
S2. Sun can destroy the Earth, the living beings
S3. harmful sun rays can kill animals...

T. That may influence only animals?
S4. Human beings, plants, all living beings, organisms...
T. ... the most important, first we have to say what diseases it may cause... cancerous tumours, eye diseases, skin diseases, cardiovascular diseases... (CO5, p. 3)

While asking students about the effects of ozone depletion, it seemed Jamila had a certain answer in her mind that she wanted to hear from the students. Her expected answer was "human beings" and after getting the answer from the students she focused on discussing it with them.

To Jamila, the environment is meant for people. Therefore, people can use trees. However, they have to be cautious not to damage them to the extent that they become "non-restorable" as plants are vital for sustaining our ecosystem. She thinks people need to take a balanced approach towards the environment: utilise and restore.

> People are obliged to make some products from trees like paper, furniture, dye, rubber... They have become part of our life. However, if we cut down a tree, we have to make sure to plant another one to replace it... If we do not do it, it will eventually be the end of humanity... (BI, p. 8)

Despite the magnitude of environmental problems, Jamila is optimistic about the future of humanity. As a human achievement, technical and technological development she perceives can rescue humanity. As technology advances, dependence on nature can be decreased. She perceived it as the duty of "highly intelligent humans" to take up this role (FI, p. 6-7). She thinks soon finite resources will be substituted with new infinite resources that may decrease the dependence on natural resources (BI, p. 16).

> If we use synthetic materials, the trees are not cut down, plants, biodiversity is conserved… Soil salinisation is prevented... soils are not easily eroded... global warming, an increase of carbon dioxide, ozone depletion can be prevented.. (BI, p. 12)

She believes the development of technology can be helpful in protecting the environment from natural disasters. As technology becomes even more advanced, it may help us shape our planet for the better.

> Advanced technology is a way of restoring nature, protecting it from tornadoes, hurricanes, volcanos, earthquakes… You know there are "cloud scattering machines" that control the rain. There can be devices to control natural disasters as well… (RI, 4)

However, she explains that the development of technology and science should not be a threat to the environment and a balanced approach should be followed here. Jamila appears to believe that the effects of technology on the natural world can be either positive or negative and humans have to make good use of technology to reduce environmental impacts.

4.4.2. Cultural-anthropocentric beliefs

Jamila's cultural-anthropocentric beliefs reflect cultural, religious and aesthetic views related to the environment which are sometimes intertwined, making it difficult to draw a clear line between them.

> I used to love nature still when I was a little kid…maybe it is something I inherited from my mom… She wrote poems, liked literature… especially she liked reading ghazals[1]… I remember the first time I went to Kabalaka, an ancient Azerbaijani city… its nature was very beautiful… still in the second century people used to live there... they had a sewage system that you couldn't see in most countries at that time… they laid water pipes through mountains… they had freezers under the caves... It was something God graciously granted us… but I feel bad that many tourists come to see these places from other countries but our people have little information about it… (BI, p. 3)

The passage shows that cultural, religious and romantic beliefs appeared to be deeply embedded in her place-based love - love for her country. She links her passion for nature with her mother and poetry. Linking her mother and nature seemed to be a sign of her beliefs of common features between the two: source of life-giving - "mother nature" (romantic and cultural beliefs). Besides, Jamila linked nature and poetry - to her both seemed to have rhythm and harmony that bring silence, peace and tranquillity (romantic beliefs). She loved the country she was born in, loved the villages with ancient artefacts (cultural beliefs). She was proud of her country, cultural inheritance (cultural beliefs), worshipped its beauty (romantic beliefs) - the beauty that was sent from God (religious beliefs). However, she was also concerned about the preservation of these cultural artefacts. The major reasons for this seemed to be new technology that greatly influences new generations' ways of life (BI, p. 10) and loss of values (RI, p. 4).

4.5. Conclusion

Addressing the research questions of this study, I may conclude that:

Research question 1 and 2. What are secondary school geography teachers' beliefs about the environment? How do they align with teachers' classroom practice? As in other cases, Jamila's beliefs about the environment were complex and could not be reflected by one belief but rather by a belief system. Jamila perceived the environment: 1) as an object – as physical surroundings, as biological components of earth, as natural resources and 2) as a means of relating to the inner and outside world through culture, religion and aesthetics. Data analysis suggests that Jamila had strong anthropocentric views but was also concerned about protecting, conserving and restoring the environment that they are culturally bound with. That proves Bogner & Wiseman's (1997) statement that "individuals could hold essentially ecocentric views while yet behaving in an anthropocentric fashion" (p. 54) or vice versa, which seems to be the case with Jamila. Jamila held anthropocentric beliefs but also believed humans need to protect and conserve nature. To her understanding, the environment should be protected (preservation beliefs); otherwise, it can have a negative effect on humans (anthropocentric beliefs). Jamila's protection beliefs seemed to be nested within her anthropocentric beliefs, being part of her broader anthropocentric belief system, as all her intentions of protecting the environment were for the sake of humanity.

[1] Ghazal was a verse mostly about love and pain dated back X-XI century. It originally was Arabic verse but was a very famous literature genre in many eastern countries, as well as in Azerbaijan.

Chapter 5. Fariz

After examining Jamila's case, I now turn to Farzi, another experienced geography teacher with 13 years of teaching experience at a school near where Jamila was teaching. Like Jamila, Farzi was born in one of the regions before relocating to the capital city. Notably, Farzi is the only male respondent in this study.

As in the previous chapter, this chapter is focused on the teacher's beliefs about the environment and the enactment of his beliefs in his classroom practice (research questions 1 and 2, sections 5.2. and 5.4.), while also exploring the teacher's beliefs about teaching about the environment and its alignment with the teacher's classroom practice (research questions 4 and 4, section 5.3.). Each subsection begins with the stated beliefs, followed by the observed beliefs related to the same theme.

The major findings that emerged from data analysis regarding research questions 1 and 2 were that (sections 5.2. and 5.4.):

- his beliefs about the environment were focused primarily on the themes of 'humans' – emphasising that everything exists for the benefit of humans and 'beauty' – appreciating the aesthetic aspects of nature;

- he mainly had an anthropocentric and romantic perception of the environment, romantic beliefs being part of his anthropocentric beliefs; nature was seen as something to be utilised and shaped according to human preferences and requirements, prioritising our convenience, prosperity and enjoyment;

- external environmentalism – low preservation approach was part of his belief system about protecting the environment and was reflected in his espoused and enacted beliefs; to him, the role of 'others' was important – tackling environmental protection and teaching about it necessitated a top-down approach, individual initiatives have less to do with protection and teaching, impactful activities and guidance should originate from government authorities at the highest level;

- congruence was observed between his beliefs about the environment and classroom practice; anthropocentric beliefs were part of his espoused and enacted beliefs;

The key findings regarding research questions 3 and 4 were (section 5.3.):

- Fariz's focus was on knowledge delivery during stated and obseved beliefs;

- during the interviews he referred to both direct and direct learning while during the class teaching only indirect learning was observed;

- the teacher's beliefs about teaching about the environment partially aligned with his classroom instruction; I observed three consecutive classes in Year 8. The topics were 'The Sources of Environmental Pollution,' 'The Ways of Protecting the Environment,' and 'Ecological Situation in Azerbaijan and Tourism-Recreational Resources' which were part of the final section in the Year 8 program. I chose to

observe Year 8 (Fariz was teaching 8th, 9th, 10th and 11th graders at school) because observing higher grades – 10th and 11th would not have been a good choice since they were busy preparing for their final exams and university entrance exams. Year 9 had already completed the section on the environment just before I began collecting my data. As we were approaching the end of the academic year, I had a chance to observe only three classes. All three classes were similarly organised, based on traditional teaching methods – mostly teacher-led focused on knowledge delivery (and aligning with his espoused beliefs), no pair/group work or outdoor classes which were noted during background interviews (not aligning with his espoused beliefs). Observing three similar classes resulted in a restricted dataset to analyse observed beliefs and the consistency between espoused and enacted beliefs.

In the sections below I give a detailed description of my analysis of one background, three recall and one final interviews and three observations with Fariz.

5.1. Personal and professional background

Fariz was born in one of the regions of Azerbaijan - Salyan, with a hot and arid climate, but later moved to the capital city Baku. Fariz's childhood memories of the environment and nature were linked to the region he was born in and time spent with his friends playing outdoors and fishing:

> Salyan is not a naturally rich region, I went there just to see my friends, do some activities that I could not do when I was in Baku, like fishing, but honestly, I don't like it, there is no river, no forest, there is nothing that could attract you visually… (BI, p. 2)

After he moved to Baku, his visits to Salyan were always planned during school holidays in summer when the area was even hotter and the experience of the heat seemed to influence his perception of the environment. He appeared to categorise the surroundings based on their inherent qualities: either favourable or unfavourable. To him, a favourable environment seemed to be characterised by a refreshing climate, trees, rivers and lakes – designed to ensure human comfort and enjoyment.

He remembered his school years visiting national parks – Absheron National Parks, where they met different types of animals, also visiting the northern regions of Azerbaijan with big forests such as Guba and Oguz. Although these visits were not always associated with teaching and learning, it was the only time students had direct experience of nature.

The school where he worked for over 13 years had limited availability for teaching students about the environment. Fariz stressed in his interview that outdoor education was an essential tool for implementing environmental education, but was disappointed with the school authorities' lack of interest and the facilities the school failed to provide.

5.2. Beliefs about the environment

The major themes that emerged from data analysis were in a close relationship where the environment was seen as a) physical surroundings a) beautiful c) existing for humans d) but humans depriving nature of its beauty. Fariz's anthropocentric beliefs were the manifestation of his seeing the environment as a physical surrounding existing primarily for human use and benefit. At the same time, he held a romanticised view of the environment, appreciating its beauty and aesthetic qualities. These perspectives were deeply interconnected, being nested within his anthropocentric beliefs.

5.2.1. Environment as beautiful physical surrounding

Fariz's perception of the environment was based on his immediate surroundings implying a subjective and personal view of nature, shaped by direct experiences. He perceived the environment as comprising tangible elements such as land, water, air, and various natural and human-made structures.

If I drew the picture of it (environment)… I would draw what I see around me…, it can be something we like, or maybe something we don't like (BI, p.1).

He further added 'When we say nature, something beautiful comes to our mind' (BI, p.2) which indicates Fariz's perception of the environment involved not only the objects he sees (such as trees, rivers, mountains, etc) – but also the feeling they transmit (such as satisfaction, enjoyment, etc.). Here, beauty, as Rautio (2010) asserts, "is not a quality of objects in themselves but an effect of the relation between the experiencing subjects and certain objects" (p. 39). He appreciated the beauty of the natural world, recognising its deep connection to human well-being, with beauty serving as a bridge between the physical environment and inner harmony. He stressed the importance of preserving nature and its beauty and nurturing it for the benefit of both present and future generations.

The major goal of protecting the environment is to save its beauty… When we say nature, something beautiful comes to our mind. We need to protect it not to lose its beauty… (BI, p. 2)

Loss of beauty of the environment was Fariz's major concern when discussing the destruction of nature by humans. As in the passage below, he valued the aesthetic qualities of the natural world, believing humans have a responsibility to preserve and protect the environment, not only for its practical benefits but also to maintain its visual appearance:

At least we need to maintain everything we see in its status quo, preserve everything we used to have… You see a forest, after some time nothing is left of that forest, all the trees are cut down… how do humans feel about that? What is the first thing that comes to one's mind? It has been destroyed and its beauty is gone… Later other important aspects emerge… such as the negative impacts it can have… (BI, p. 6)

This may seem to denote the intrinsic value of nature, but it is not free of humans' desires or views - he seemed to believe the environment needs to be beautiful to please humans. His intrinsic beliefs of the environment seemed to be part of his anthropocentric beliefs, he believed nature needs to be valued and protected but the ultimate goal was the prosperity of human existence.

The notion of beauty was raised when he talked about the human-environment relationship where he considered both the positive impact on nature by humans as 'beautifying' and the negative impact as making nature look 'ugly':

Human impact means changing the environment… changing – is it making it beautiful or ugly? For example, Arabia, or northern Africa… these places are desert landscapes… if humans create something in these areas, there is nothing in those areas, they are making these places charming, adding beauty to their nature… but if we create something by destroying that was originally present in that area – it looks bad (RI, p. 1)

To him, human impact on the environment can indeed lead to changes, and whether these changes are perceived as making a place more beautiful or less attractive depends on the context and the actions taken.

As it can be seen in the passages above, within Fariz's anthropocentric beliefs, beauty seemed to have a particular place as it was one of his ways of connecting to his surroundings. This resonates with what Rautio (2010) argued, "Beauty guides us to evaluate this desirableness in light of the past and commits us to replicate and protect it (the environment) for the future" (p. 39). However, Fariz's perspective extends Rautio's framework by suggesting that beauty is not inherently tied to preserving the natural state. Instead, Fariz viewed human-made changes as an enhancement of beauty, which complicates the notion of protection through preservation. However, human-made changes are not one-dimensional, they can carry two distinct meanings. His romanticised desire to protect the environment also reveals a tension between human intervention and environmental preservation. This duality suggests that Fariz may be blending utilitarian and romantic views through beauty, moving beyond the understanding of how beauty influences environmental beliefs.

Interestingly, the subject of beauty did not arise frequently during the observations. It was mentioned only once, and even then, it received limited attention

T. Why do we need to protect the environment? What is the importance of trees and plants?
S. They are a source of oxygen…
T. what else?
S. They are beautiful…
T. You mean just for decoration? Besides decoration, the trees are for people. They are part of recreational resources that can be used for tourism and treatment. People need to rest to be healthy... (CO2, p.5)

Since I had the opportunity to observe only three of Fariz's classes, it is possible that the topic simply did not arise during those particular lessons. However, it could potentially be addressed in other lessons that I did not have the chance to observe.

5.2.2. Environment as a resource to be used

During later discussions, the instrumental value of nature was stressed even more explicitly when Fariz believed in the existence of environment for human beings: “Like water, trees are vital for our life. Plants and trees are the sources of oxygen” (BI, p.2). Fariz seemed to prioritise human interests and needs over other considerations and believed that nature existed primarily to serve human needs and desires. He saw the environment as a resource to be used for economic or recreational purposes, not much focusing on its inherent value and worth. He was concerned about environmental degradation but at the centre of his concern was the loss of resources that are utilised by humans:

If we have ecological collapse, we won’t be able to live… plants, animals, water, soil – all will be affected by radiation, it won’t be a place for humans to live, it will be the end of life…(BI, p.11)

He was aware that environmental degradation meant the destruction of ecosystems, of all living beings –humans, plants, animals, but he was more focused on humans and saw the end of animals and plants from the humans’ perspective that they would have no use for the human beings and when he said ‘it will be the end of life’ he seemed to think of the end of humankind.

During his lessons, he consistently emphasised the central importance of human beings in relation to the natural world. He emphasised how humans were at the peak of creation, focusing on human needs, desires, and progress above all else. While discussing the pollution of the Caspian Sea with oil, he expressed his despair regarding its impact on marine life from the perspective of human beings:

We can observe this while we walk in Boulevard[1]… The pollution not only affects the water but also has a significant impact on marine life. People who fish from the shoreline can particularly notice this impact. Personally, I occasionally enjoy fishing… The fish in those waters carry the taste and smell of oil… fish caught from elsewhere have a distinct difference in smell… it is not just smell, you can taste it… can you imagine the extent of water pollution? It has permeated the bodies of fish… (CO1, p. 2)

The extract shows the teacher cares about the environment, concerned about its protection, but his perspective leans towards anthropocentrism as his attention seems to be more focused on human interests and preferences – the taste of fish from an oil-polluted sea rather than the well-being of fish itself. His rationale for this was that “everything in the environment is meant to serve human needs” (RI1,p.2). A similar discussion arose about the COVID19 pandemic period. Stressing the economic importance of the environment, he saw nature as a source of income (CO3,p.2, RI1,p.1) adding countries with beautiful nature - lots of forests, seas and lakes and heavily reliant on tourism and natural resources suffered economically during the COVID19 pandemic

[1] Boulevard is a national park near the Caspian Sea located in the capital city - Baku.

as they were deprived of their income (CO3, p. 2). However, he did not mention the benefit the pandemic could have to nature due to travel restrictions such as reduced carbon emissions or regeneration of natural environments.

Here Fariz came up with the idea of ‘balanced’ nature where he thinks humans use Earth's resources to meet our needs but recognises the importance of ensuring their restoration. Fariz’s restoration beliefs do not solely imply restoration by humans, but nature itself.

There are resources, such as plants and animals, that possess the ability to be easily restored. Given their potential for regeneration, we can utilise these resources with ease and confidence… Since the world’s inception, it has been this way… nature always provided food and shelter… if it were not like this, we would not have life on Earth today… It is the way nature designed it. We receive sustenance from the environment, and in turn, we provide nourishment for other beings. This interdependent relationship is a fundamental rule of nature… (BI, p. 8)

He recognises the vital role these resources play in supporting our daily needs and enhancing our quality of life. He believes humans have the capacity to responsibly use natural resources like plants and animals because they have the potential to be restored.

5.2.3. Human-nature relationship

From the initial discussion, it could be sensed that at the centre of Fariz’s beliefs about the environment was nature. While talking about the environment he usually framed his understanding of the ‘environment’ around ‘nature’ and indicated two opposing categories: pleasant and unpleasant environments - nature. The first expression indicated nature-rich areas not ‘spoiled’ by human interaction while the second was the sign of loss of nature or ‘poor’ nature where it was often linked to human negative effects on the environment: ‘wherever humans exist, there inevitably will be environmental problems’ (CO2, p.2). The pleasant environment - nature was mainly associated with green spaces, different from what he currently experienced, providing immaterial favourable living conditions to satisfy their needs:

Nature is meant to exist for humans, to make their life easier, it needs to be a healthy environment for the humans’ safety. (BI, p. 1)

Protection of the environment means safeguarding human health (CO2, p. 6)

Protection beliefs of the environment also focused on planting trees, building parks, and expanding green areas for the convenience of humans. Throughout the interviews and observations, he referred to the environment as nature and noted it existed for all. He acknowledged humans to be part of a ‘great chain of being’ and being dependent on nature. However, his thinking of ‘all’ implied humans excluding other living entities and non-living entities from ‘all’:

Nature is for all, it is not meant to exist just for a single individual. If it is for everyone, we all need to think of ways of protecting it, we need to take it seriously. (BI, p. 4)

He seemed to think of nature as an object belonging to humans rejecting its own autonomy or independent existence imposed by human influence. To Fariz, by serving their needs, humans may both destroy or restore nature. They might choose to be "destroyers" and "restorers" of the environment - all depends on their intention. The loss of forests and pollution is mainly caused by humans fulfilling their desire to have better living conditions. They might also choose to restore nature. When individuals view nature as a means to fulfil their needs, they often undertake actions to restore and preserve it.

He did not argue against human dominion over nature, but opposingly notes humans as the most powerful part of the great chain of being. He believed it was the right of humans to make use of natural resources for their survival.

It is an unwritten rule of nature, the one who is stronger will rule, if we don't, there can be chaos… Humans are more conscious than any other species, they know best what and how they need to do it for environmental management, we use natural resources and we think of ways of doing it sustainably for humankind… (BI, p. 9)

He emphasises the immense power humans possess to protect and restore the environment, viewing it as a mutualistic relationship where both parties benefit. Moreover, he added that our ability to control and manipulate the environment has lessened the once-critical dependence on it. He acknowledged that nature still played a role in providing raw materials and ecosystem services, but believed that human innovation and progress had significantly mitigated the risks associated with relying solely on the natural world and humans had surpassed the need for a close dependency on nature that existed in ancient times

In ancient times, people used what nature provided them with… they were more dependant on nature, on its products… but it is not the thing today… (BI, p. 6)

Fariz acknowledged the interdependence between humans and the environment, but this relationship was rather symbolic – the human-environment relationship was a reflection of his thinking that by caring for nature, humans can ensure its continued provision of resources and benefits.

5.2.4. Anthropomorphism

Anthropomorphism was one of the subtle aspects of Fariz's beliefs about the environment. He had a unique perspective of the environment, seeing nature as a living, breathing entity with its own voice. To him, nature and humans were in a mutual relationship, but his perception of 'relationship' extended beyond an instrumental perspective. He seemed to have emotional bond with nature that went beyond

intellectual understanding. This relationship emerged specially when he thought of nature as about the negative consequences of human effect on nature:

If we destroy nature, it will consequently destroy us as well. If we influence nature negatively, it will make us pay for that, if we don't want to see the worst of it, we need to protect the environment. Nature has experienced natural disasters for many years but severity and frequency of them have seen a noticeable rise recently… and this is due to the negative influence of humans on nature… (BI, p.6)

Considering "Projecting human characteristics onto nature can imply a relation to nature in which one strives to extend a sense of self-based on similarity" (Rautio, 2011, p. 111), with a touch of personification – 'nature will make us pay for that', Fariz applied human features to nature and his anthropomorphist beliefs emerged around the notion of 'fear' covering both human and nature's 'ability' to destroy as mutually dependant.

Fariz seemed to hold belief that nature relies on human intervention for its survival. He personifies nature as an entity that depends on humanity for protection. According to his perspective, humans play a pivotal role in maintaining balanced ecosystems. He envisions himself and fellow humans as custodians of the natural world and believes that through our advancements in technology and scientific knowledge, we have become the primary caretakers of the environment.

When environmental pollution reaches its peak, humans find themselves powerless to help… neither humans nor nature are in a position to assist each other… It is crucial for us to adopt behaviors that prevent the situation from reaching such a critical level… (BI, p. 9)

Though anthropomorphism is considered to imply an anthropocentric connection with nature (Rautio, 2011), it may establish an empathetic connection with nature that can be a basis for moral consideration (Gebhard et al., 2003; Waytz et al., 2010). Believing it is necessary to restore and substitute what has been lost, Fariz' anthropomorphic perspectives entailed respect and empathy:

Even if it becomes necessary to cut down a tree, for every tree that is removed, I would try to plant new ones in different areas, aiming to … kind of… restore and substitute what has been lost… only in this case nature might forgive me… (BI, p.14)

As Fariz perceives nature as a sentient being capable of forgiveness, his anthropomorphism was the reflection of attributing the human mind and emotions (e.g. joy) to nonhumans rather than assigning humans' physical characteristics (e.g. face) to nonhuman entities (Waytz et al., 2010). Nature forgiveness was the manifestation of Fariz's moral values towards the environment through a sympathetic approach and care. He believed if we recognised our mistakes and actively worked towards repairing the damage we had caused, nature would respond with grace and forgiveness because nature was generous enough 'to grant' us with its natural resources (BI, p. 14). Anthropomorphism did not manifest in the teaching process. This lack of manifestation does not necessarily indicate an inconsistency between espoused and enacted beliefs.

Rather, it could be attributed to the limited time I had to observe Fariz's classes. It's possible that such anthropomorphism might have been evident in classes that were not under observation.

5.2.5. Unconsciously and consciously expressed beliefs

Related to the way Fariz expressed his beliefs, his anthropocentric beliefs can be divided into two categories. The first is his 'unconsciously expressed beliefs', which emerged naturally without much deliberate thought. These beliefs seemed instinctive and effortless. The second category is his 'consciously expressed beliefs,' where Fariz took the time to reflect before expressing his thoughts on the relationship between humans and the environment.

Regarding unconsciously expressed beliefs, overall our discussion with Fariz revealed strong anthropocentric views where humans were seen as superior and independent of nature:

Nature is meant to exist for humans, to make their life easier, it needs to be a healthy environment for the humans' safety. (BI, p. 1)

It is an unwritten rule of nature, the one who is stronger will rule, if we don't, there can be chaos… Humans are more conscious than any other species, they know best what and how they need to do it for the environmental management, we use natural resources and we think of the ways of doing it sustainably for humankind… (BI, p. 9)

However, his logical inference - consciously expressed beliefs was that humans are part of the environment, the environment can exist not depending on humans while humans are dependent on the environment and cannot exist without it and are attached to the place they belong to. However, his 'uncontrolled' – first occurred beliefs manifested human dominance in nature denying his own thoughts - 'one cannot be without other'. He was aware of the tensions between his beliefs noting:

Even if we don't say it, we don't accept it we need to acknowledge we depend on nature, on the environment we belong to. The air we breathe, the water we drink, the ground we walk on… all are part of Earth. Humans evolved from nature, it existed before we did, we emerged as part of it… It obviously means we can't exist beyond nature… (BI, p. 6-7)

When we say environmental pollution we see it from humans' perspective thinking about its effects on them. But when we go beneath our thinking, we understand it is destruction of nature that consequently may lead to the end of humanity. We think of humans before nature. But we need to think of nature before thinking about humans… (RI3, p.4)

He had a similar perspective about plants where he questioned himself, thought out loud, explained and came to the conclusion that plants have the right to exist beyond the desires of humans:

Plants… I think… they are alive… they are considered to be alive… yes? if they are alive they have the right to exist… all who is alive have the right to 'live'. (BI, p.7)

He opposed his own views of human dominance in nature by saying 'Both humans and plants have equal rights…' (BI, p.7), even going further by adding:

> Yes, they have equal rights… but… if there are no plants, there are no humans… but if there are no humans, plants still can exist… then it means plants are more… they need to exist to keep us alive… (BI, p. 7-8)

Self-correcting himself by acknowledging the important place of plants in nature, Fariz came to the conclusion that without plants life would not be sustained on Earth. However, when it came to the use of plants for human needs, he seemed to be left in between – we need to use them because we cannot without them, simultaneously, they have the right to exist and be protected.

5.3. Beliefs about teaching about the environment

The first thing Fariz mentioned about teaching about the environment was the significance of knowledge about the environment and environmental challenges. He further stressed the importance of exploring a local environment in the first instance and later being able to learn about the issues students come across at the regional and global levels:

> It would be better if we started teaching geography from where we live. First, we start with the terrain, then the characteristics of the climate, then internal waters like rivers, lakes, groundwater, etc., and then related to that, the biosphere. For instance, I look at where I live: Is it flat or rough? What is the climate like? Looking at its characteristics, we see it is dry. If it's dry, then we think animal life will be scarce… (BI, p. 12-13)

Further adding:

> Let's say we're learning about earthquakes and volcanoes, but if there are no earthquakes or volcanoes in your country, why should we start the class learning about earthquakes? You'd rather learn something that is more relevant to you. After all, if we are studying the geography of Azerbaijan, we should first and foremost study the events and processes happening in our own country more closely than others. Of course, we should also be informed about other places, but the problems within our own country should be emphasised more deeply from the beginning (BI, p.20).

The extract reflects Fariz's belief that knowledge delivery should be relevant and context-specific. He emphasises that teaching should prioritise local issues and geographic phenomena that directly affect students' own country, as this makes learning more meaningful and engaging. While acknowledging the value of broader knowledge, he argues that deeper understanding should begin with familiar, locally significant content. Fariz believed "students can analyse the problems of the place they live, that they directly experienced rather than the problems that they have never experienced" (BI, p. 16) and in this way this allows students to work independently to be able to explore the problems of the area they live.

This aligned with his enacted beliefs as seen in the example below regarding the pollution of the Caspian Sea – a local sea with the broader context – pollution of different seas and gulfs with crude oil. While he was discussing with students the pollution of water worldwide, he asked the students about the presence of water pollution in their

own country. Students shared different examples and eventually delved into a conversation about the pollution of the Caspian Sea and its impact on the marine life and surrounding ecosystem (CO1, p. 2). Or when the topic of different types of pollution arose, he asked about the occurrences of both natural and human-induced pollution in their country, when they discussed polluted rivers in the world, he asked the students about the most polluted river in Azerbaijan and while discussing air pollution he stressed the current critical situation on the area their school was located (CO1, p.5-6). He was also focused on connecting knoweldge about environmental issues at both national and international levels:

S1: Another reason for water pollution is crude oil...
T: Do we have this problem?
S2: Yes
T. Where?
S3. Caspian shores
T. Which parts of the Caspian coast are polluted on our side? The Absheron coast... There isn't much on the southern side, and there isn't much on the northern side either. Most of the pollution is along the Absheron coast… What about other than the Caspian?
S4. The Black Sea, the Mediterranean Sea...
T. There is pollution along the Black Sea and Mediterranean coasts as well...
S5. The Gulf of Mexico...
T. One of the most polluted places is the Gulf of Mexico. It could be the Caribbean Sea, or the Gulf of Guinea on the west coast of Africa. The Persian Gulf is in first place. There's also the North Sea… (CO1, p. 1-2)

Fariz seemed to adopt a comprehensive and global perspective, highlighting key areas of environmental pollution across different regions and emphasising their relative severity to foster a deeper understanding of global ecological challenges.

Regarding how to teach about the environment, Fariz believed that students can gain knowledge about the local and global environment not only through textbooks but extra resources should be employed as well. He recognised that environmental education was multidisciplinary and environmental concepts and principles could be integrated into various subjects, fostering a holistic understanding of the environment. Following this, he thought as an interdisciplinary subject environmental education should not be just taught within the limits of geography and textbooks. He took an 'inclusivist' approach (Reid, 2000) thinking geography holds immense significance, even though other educational activities can also make valuable contributions. Stressing the limited opportunities of textbooks, Fariz noted the importance of teachers' 'creativity' to incorporate environmental topics into their curricula. Defined as 'educators' characteristics' by Powell et al. (2023) teachers' capability has been widely cited recently as significant for teachers' professional development (G. Evans, 2022), as well as for the effective implementation of environmental education (Jones, 2023; Powell et al., 2023) where teachers are expected "to design and develop their own curricula" (Jones, 2023, p. 395).

The textbooks are made within an established framework, but it is up to teachers to go beyond textbooks and curricula. Additional resources and experiences can contribute to students' learning and understanding… (BI, p. 15)

He noted the importance of promoting active learning - hands-on activities, field trips, experiments, and projects that allowed students to directly interact with the environment. To him, this experiential learning approach fostered a deeper understanding and personal connection to the environment.

… during practical experiments in class and outdoor education – field trips students can directly engage with exploring nature and be able to feel and see it… (BI, p. 18)

He did not just rely on textbooks but brought different examples and information and related environmental issues with students' local area and students seemed to have broad knowledge about the environment and environmental issues. It was teaching about the local environment indirectly within the classroom. No practical or outdoor classes were observed. His rationale for this was the lack of initiatives, as said earlier, on the part of the government, financial difficulties, the limited number of geography classes and the lack of resources. Furthermore, he stressed the importance of a geography laboratory at school and notes that his school did not have one.

The first thing that comes to mind when you say environment is nature… It would be more effective if we could spend more time in nature by doing outdoor projects while we teach about the environment, biosphere… such as measuring humidity... we need resources for this… we must have a geography lab with resources to be able to show students how to measure it… (BI, p.23)

He believed in the importance of spending time in nature and visually representing geographical phenomena that could enable students to make connections between what they read in the textbooks and real-world examples.

Debates, group work, pair work, and discussions were deemed important by him to improve students' critical thinking abilities:

Textbooks present opportunities for the students to think critically, to explore reasons and make inferences about, for example, drought and can be done to prevent it…the students are divided into several groups and they discuss it… (BI, 24)

We have debate classes in certain sections, particularly for 6th and 7th graders. For example, we hold debates on topics like the Amazon rainforest and the issues surrounding its deforestation… (BI, p. 23)

We work in two groups… When working in groups, some kids engage while others do not, in pairs everyone is involved (BI, p. 24)

Fariz believed students were more active while working in pairs compared to group work, because in group work active students might take ownership while some students may get behind. To him, by engaging in group or pair activities, students had opportunities to share ideas, problem-solve collectively, and learn from one another.

However, there was a misalignment between Fariz's espoused and enacted beliefs regarding how to teach about the environment since only the indirect method -

lecturing was used throughout the three observations, no other indirect approaches, such as pair or group work activities or direct learning approaches, such as fieldwork were employed.

5.4. ‘External environmentalism’ - Low preservation

Fariz’s strong anthropocentric beliefs were accompanied by the perspective of ‘external environmentalism’ - he appeared to believe the environment can be utilised and should be protected but he believed environmental protection and education should be primarily the responsibility of organizations, institutions, and governments rather than individuals. His lack of interest towards promoting and initiating ecological protection points out a position that could be described as low preservation – limited support for protecting the environment along with his high utilisation beliefs – human dominance and prosperity (Wiseman & Bogner, 2003). Seeing problems as global in scope may have contributed to his 'external environmentalism' – low preservation beliefs, first, due to its magnitude, second, due to its existence ‘hauntologically’ - hearing a lot about global warming but not being able to act since we are not ready:

> … in an uncanny way, global warming is also ‘in’ us: it is inside our thoughts, our ways of life and the objects we engage with daily; and therefore, it is impossible to externalize in our traditional spatial categories like ‘nature’ or the ‘environment’. The event of global warming, in short, does something to places that our concepts of it are not prepared for: it haunts (Saari & Mullen, 2018, p. 2)

His perspective placed emphasis on collective action and large-scale policy changes to address environmental issues. ‘External environmentalism’ affected his beliefs about environmental pollution where he seemed to suggest that pollution was often caused by industrial and economic activities, saw the sources of problems outside of individual settings, thinking individuals’ negative impact on the environment could not be compared to the negative effect of the big industrial cities that is regulated under collective decisions of high-rankings.

5.4.1. ‘Top-down’ approach to environmental protection

Fariz held the notion that everything in existence revolves around human interests and well-being. However, what set Fariz apart was his profound concern for protecting the environment seeing the protection as: a) beyond the limits of individuals b) to be carried out by ‘big countries’ c) on state level. While he may prioritize human needs and advancements, he recognise the intricate interdependence between humans and nature and the protection of the environment was seen as a top-down approach by him. He seemed to focus on government policies and regulations that aimed to mitigate environmental harm believing that the responsibility for environmental protection should primarily fall on the government.

To Fariz, the environment is polluted by big, developed countries rather than small developing ones, by big cities rather than districts and villages, and by the people responsible for governing states rather than lay people. He seemed to believe that industrial pollution by big countries cannot be compared to the pollution caused by individuals. One sign of it was the difference between the level of pollution - the quality of air and water in cities and districts:

Where do you think acid rains occur? In developed countries, where the concentration of industrial plants can be observed… when we go to the regions, we do not feel the pollution of the air or water to the extent we do in cities… opposingly it feels fresh… (BI, p.13)

He believed that the government has the resources and authority to make meaningful changes to protect the environment, and saw individual actions as insufficient or ineffective in addressing large-scale environmental issues:

We are heading towards global problems… the resolution of these problems requires collaboration of big countries. Anyway, it is primraiy these countries that contribute the most of to environmental problems. The countries like ours is like a drop in a sea… (CO2, p. 3)

His rational for that was that if majority of big and developed countries come together to protect the environment, a few countries may remain neutral as they might not have much impact (RI2, p. 4). Focusing on state officials and expecting them to think of ways of environmental management, he also believed individual social responsibility was not as important as governmental responsibilities and its contribution was not far-reaching. Focusing more on government authorities rather than on activities on an individual level, he suggested that being socially responsible and behaving ethically towards environmental issues had to be followed by the top managers at the first instance, individuals just follow the rules imposed on them and the power of governmental decisions could not be compared to individual intention to take action to prevent environmental problems.

He believed governmental executives, especially in developed countries due to industrial, technical and technological development are responsible for pollution Humans' negative impact on nature is not measured by an individual act, but by pollution on state levels. To him, small countries like Azerbaijan have little to do with either pollution or protection, it is managed by the decisions of big countries.

It is mostly developed countries that cause environmental pollution due to the concentration of industrial activities within these countries … that is why often measures for environmental protection are proposed by developed countries (CO1, p. 7)

He did not think of his (or other individuals') actions as having a negative impact on the environment and did not believe the role that individuals may have a significant contribution to environmental problems but rather believed that the actions of others can contribute to broader environmental problems. His rationale was that a significant portion

of industrial goods is produced by a relatively small number of developed countries - at least 50 per cent of it is provided by 20-30 developed countries which is an indicator of pollution in those countries (RI2, p.3)

5.4.2. 'Top-down' approach to environmental education

Though Fariz acknowledged the crucial role teachers play in teaching about the environment and promoting environmental education and stressed the significance of teachers' creativity, he primarily saw himself as an 'instructor' conveying environmental knowledge and messages to his students, emphasizing the importance of following established guidelines and practices. Following our discussion about environmental education at schools, Fariz stressed the lack of initiatives on the part of the government - financial challenges, restricted academic hours in the geography curriculum and inadequate resources and thought the responsibilities of effective implementation of environmental education lay with authoritative representatives, such as policymakers and government agencies. He added the lack of interest among students in geography classes was linked to state-level regulations (RI3, p.6). Limited financial support, poor integration of environmental education into geography curricula, and lack of administrative support have been cited as the major problems of ineffective implementation of environmental education in the Austrian context as well (Kowasch et al., 2022).

Moreover, he stressed the importance of families, TVs, social media in instilling environmental values adding they serve as the primary socialising agents that can instill a sense of responsibility, respect, and connection to the environment. Emphasizing the importance of early years education he said by nurturing a sense of connection, empathy, and responsibility towards the environment from a young age, we can cultivate a generation that is passionate about protecting and preserving the planet.

The notion of the environment begins with individuals, with ourselves.. It is not solely the responsibility of schools; instead, it should be taught within the home… by parents… kids spend 4-5 hours at school, but they are with their families for 18 hours… of course, it is not just parents, parents are very busy… TVs… social media is widely accessible today… they can disseminate environmental knowledge… instilling environmental awareness should commence from an early age, children tend to retain and practice such teachings more effectively than individuals in their twenties… (BI, p. 24-25)

Though Fariz acknowledged schools and teachers' contribution, he seemed to believe the role of television, social media, and families surpasses that of teachers and schools in instilling environmental values as widespread accessibility and influence of these mediums can be more effective than formal education.

Though Fariz seemed to believe that individuals can make only a limited impact on the environment he was still concerned and cared about it and seemed to advocate that large-scale policy changes are needed to create significant change.

5.6. Conclusion

Briefly addressing the research questions in the specific context of Fariz, it may be concluded that:

Research question 1 and 2. What are secondary school geography teachers' beliefs about the environment?

Beliefs about the environment: The teacher predominantly held an anthropocentric view of the environment, considering nature as a resource to be used and controlled based on human preferences and needs. Within this anthropocentric perspective, romantic beliefs also played a role, romanticising the relationship between humans and nature.

A distinction was observed between his spontaneous beliefs and the beliefs he expressed after deliberate contemplation. His logical inference was that humankind and the environment are interdependent and have always co-existed, humans cannot exist without their environment.

Enactment of beliefs about the environment: teacher's beliefs about the environment aligned with his classroom practice. The anthropocentric beliefs frequently appeared during discussions and instructions.

Research questions 3 and 4. What are teachers' beliefs about teaching about the environment? In what ways they were enacted in their classroom practice?

Beliefs about teaching about the environment: The teacher believed it was important to teach students about environmental issues in their local area and later relate them to regional and global environmental problems. Different teaching strategies were deemed appropriate such as debates, group work, pair work, discussions and outdoor classes.

Moreover, his environmental and teaching beliefs encompassed the concept of external environmentalism. He seemed to believe individuals are not capable of doing change, but instead, management, planning, and decision-making about environmental protection and teaching should be generated by 'top levels'.

Enactment of beliefs about teaching about the environment: His beliefs about teaching about the environment partially reflected his espoused beliefs – he seemed to relate local, regional and global environmental problems and facilitated discussions. However, no debates, group/pair work, discussions and outdoor classes were observed.

Chapter 6. Mehri

Mehri was a highly experienced geography and biology teacher with over 30 years of teaching experience. At the time of this research, she was teaching only geography. She was the only teacher at the school with published articles and had served as the head of the school's Geography Subject Teachers' Association for over a decade also mentoring junior geography teachers. I conducted a series of interviews with Mehri, including a background interview, two recall interviews, and a final interview. Additionally, I had a chance to observe four of her classes, where I was able to see how her beliefs about the environment were reflected in her teaching practices.

Research questions 1 and 2 were discussed in section 6.2 and the major findings that emerged from data analysis were:

- anthropocentric beliefs were evident in her stated and observed beliefs;
- stated beliefs about the environment aligned with observed beliefs in most cases;

Section 6.3. addresses research questions 3 and 4 and the key findings were:

- beliefs about teaching about the environment aligned with Mehri's classroom instruction;
- cognitive, affective, and behavioural activities were employed while teaching about the environment.
- Mehri's teaching approach primarily emphasised knowledge-focused instruction.
- She incorporated a variety of indirect learning activities.

In keeping with the structure outlined in earlier chapters, this chapter is divided into two main sections to explore beliefs and practices about the environment and environmental education. In section 6.2, each subsection begins by addressing research question 1 before transitioning to research question 2. While highlighting areas of alignment and misalignment, I refer both to stated and observed beliefs. Similarly, section 6.3 follows the same organisational structure, first discussing research question 3 and then moving on to research question 4.

6.1. Personal and professional background

As a geography and biology teacher, Mehri was concerned about protecting the environment which she clearly related to her profession. To her, by teaching students about the environment teachers become aware of environmental problems and the need to tackle them: "I suppose my concern about environmental problems is related to my profession as I come across these problems almost every day" (BI, p. 3). Moreover, she related her love and care for the environment with the fact that she was brought up in rayon[1] and experienced nature directly. She loved her rayon, remembering its beautiful nature, clean and fresh air and organic foods. She also loved the area she currently

[1] Rayon is administrative unit in Azerbaijan

resided and worked recognising the positive changes made by the government recently within the framework of transforming the once-called 'Black City' into the now-renamed 'White City':

The issue of the 'Black City' is currently a prominent topic in the Khatai district where I reside. The area, which was previously associated with oil and fuel pollution, has now undergone a transformation and is known as the White City. The noticeable cleanliness is evident throughout the area… It's a great relief that we are moving towards successfully accomplishing this transformation… (BI, p. 1)

Mehri remembered her geography teacher while she was at secondary school with great admiration seeing her as an influencer in her life to become a geography teacher:

My geography teacher was so demanding, but we loved him… He showed us the boundary line between Europe and Asia with great enthusiasm. He would put the pointer on the map, even reciting it from memory with closed eyes.. Ural Mountains, Ural River, the northern coast of Caspian Sea. He recited that sequence in one breath, we liked that, admired him. He was the one who influenced me to love this subject… (BI, p. 18)

During geography classes she used to have visual aids such as models of volcanos, mountains which she believed helped students visualize the structure and eruption process, geological formations, landforms making it easier for them to understand and remember the information. She believed visual aids contributed to her understanding of the environment.

Although she did not explicitly attribute her school and workplace as having a significant impact on her environmental perception and understanding, it was evident that she valued the education she received regarding the environment and the support she received from her workplace for her environmental initiatives. She expressed satisfaction with the opportunities provided to her but expressed a desire for enhanced teaching resources at her school to further enhance the implementation of environmental education.

6.2. Beliefs about the environment

Mehri's perception of the environment revealed itself within the boundaries of a complex human-environment relationship: an environment that exists for humans and humans that are responsible for the degradation of the environment (6.2.1.). Humans were above everything and Mehri explicitly admitted humans being superior to other entities (6.2.2.). To her, natural resources are meant to be used by people and she did not seem to blame humans for polluting the environment, relating it with 'the efforts to meet demands of increasing population' (BI, p. 5), though she seemed to believe humans were responsible for environmental pollution (6.2.3.).

6.2.1. Human – environment relationship

Mehri's primary concern and motivation to protect the environment stemmed from her recognition of the negative impacts of environmental issues on humans as a result of humans' negative effects on the environment.

> Humans are the first and major contributors to environmental pollution. It is true, but why do people do this? It is important and unavoidable to look for the ways to meet the demands of the growing population. We cant blame anyone… I plan the bread I bought today will be sufficient for my family but if I have two more guests it becomes necessary to get an extra loaf… (BI,p.5)

The extract above suggests a more nuanced understanding of the complex relationship between human activity, population growth, and environmental degradation. She seems to be more constructive to focus on finding solutions that address both population growth and environmental concerns by seeing proactive measures as important to address these issues. Just as in the example of the purchase of bread for one's family, on a larger scale, meeting the demands of a growing population means finding solutions that balance human requirements with environmental preservation.

- T: What ecological challenges do we encounter due to a growing population?
- S: The depletion of food resources, water resources.
- T: Are these ecological problems?
- S: The number of food consumers increases, it impacts ecological issues.
- T: It's not the number of people, but the production and consumption of goods to meet the demands of a growing population that directly contribute to environmental problems. To fulfil the increasing demands of the population, we must protect the environment… (CO3, p. 3)

While she recognises humans as significant contributors to environmental issues, she appeared to view these challenges as a natural consequence rather than solely blaming humanity for their actions. She saw these problems as an expected outcome of overpopulation. Instead of assigning blame to individuals, she seemingly believed that the increasing human population inevitably leads to greater demands on resources that subsequently lead to environmental problems.

Mehri acknowledged the human-environment as in mutual relationships but her perception of 'mutual relationship' seemed to focus on the benefits of environment and its resources for humans - being a one-sided relationship rather than a mutual one: "We need to protect them (plants) because humans need oxygen" (BI, p.8)

The existence of the environment for the well-being of humanity and the human effect on the environment were the conceptions that were frequently observed during class observations. While discussing with the students the layers of the atmosphere, the teachers revealed the essence of the ozone layer as:

… imagine the ozone layer as an umbrella on a rainy day. It prevents you from getting wet.. If a hole appears in the ozone layer – (like having a hole) in the umbrella, the rain will soak us.. (CO4, p. 4)

Simplifying the concept of the ozone layer for easier understanding, Mehri illustrates the function of the ozone layer and its importance in protecting us – humans from harmful effects without paying much attention to the effects of ozone depletion on non-living beings, plants, animals, marine life or microorganisms.

The teacher acknowledged the detrimental impact humans have on the environment by enumerating the various causes of environmental degradation, all of which are human-induced:

What are the primary factors contributing to environmental issues in Azerbaijan? Can we indicate deforestation, river pollution, vehicular emissions, the adverse effects of industrial plants? (CO3, p. 2)

Inquiring about the primary factors contributing to environmental issues and highlighting these specific examples, the teacher seemed to emphasize the importance of recognizing our role in environmental degradation.

She also acknowledged the activities related to environmental protection to be interrelated comparing it with a ‘necklace’:

All its (environmental protection) components are closely connected with each other… it is like a pearl necklace, if the lace is torn, all the pearls will scatter. The protection of the environment is the same. If we wont do it in a right way, if the pearls are not neatly arranged, environmental pollution will become even worse… (CO3, p. 7)

While Mehri's environmental beliefs were primarily rooted in the instrumental value of protecting the environment, there were indications that she also held a belief in the intrinsic value of nature, albeit not frequently expressed during interviews and observations. Mehri notably emphasized the direct impact of river pollution on marine life:

The river Okchuchay is the most heavily polluted river in Azerbaijan. The industrial waste in the Gajan and Gafan regions is directly discharged into the river Araz, which subsequently flows into the river Kur, ultimately reaching the Caspian Sea. As a result, this leads to the destruction of living organisms within the Caspian Sea (CO3, p. 3).

Or while informing students about the consequences of acid rains she went on:

During the period of vegetation when trees blossom, acid rain leads to dryness… blossoms start to dry out from the top. The growing phase ends. It is one of the biggest negative effects of environmental pollution… (CO3, p. 7)

The extracts above suggest an underlying recognition of the inherent worth of the well-being of all living beings other than human beings not valuing them within the limits of humanity.

6.2.2. Anthropocentrism - protecting the environment for human sake

Mehri seemed to have anthropocentric beliefs about the environment where she filtered her thinking of environment and environmental protection through the lens of how it benefits and affects humanity. Her anthropocentric beliefs were rooted in a sense of fear and apprehension about the future of humanity. By observing the detrimental effects of environmental problems, especially focusing on pollution, Mehri was concerned about its consequences for human well-being. These concerns appeared to strengthen her anthropocentric beliefs of the environment.

> Let's say we polluted the environment… waste of industrial activities, acid rains… ozone depletion… This can contribute to the development of variety of skin diseases, rashes, eye redness… recently we can observe declining life expectancy… Heart attack, various heart diseases… What are their reasons? Azerbaijan used to be the country of 'long-lived's'... what does this mean? It is all the consequences of environmental problems (BI, 6-7)

As the extract illustrates, her perspective might have been driven by the belief that safeguarding the environment was crucial for the survival and prosperity of humanity. While recognizing the importance of preserving nature for its instrumental value, the teacher's focus lies on the positive impact that a healthy environment can have on human lives:

> Yes, sure plants have the right to exist, we need to protect them, because people need oxygen… If there were no plants, the process of photosynthesis, how would people breathe? We need to protect and expand them… what plants, trees give us? We write on them, we eat their fruit, breath, it all comes from them… (BI, p.8)

Within Mehri's anthropocentric beliefs about the environment, she held distinct notions of 'natural-organic' and 'artificial - non-organic' elements with a focus on human health. It was a contrast between the environment she dreams about and the one she lives now, between purity and pollution, unnatural and organic products, clean and polluted air. She expressed particular concern about the significant impact of 'artificiality' in our lives, which manifests in various ways such as polluted air, genetically modified food, and plastic bags and bottles.

> I would like a world that aligns with my dream, a natural one… I long for the return of the clean, natural environment we once used to have… you know about GMOs (genetically modified organisms)… just consider the potential impact they have on our fruits and vegetables. If their effects on fruits and vegetables cannot be denied, you can imagine the potential consequences they may pose to human beings… (BI, p.1-2)

She further added:

> I am concerned about the usage of polyethylene bags… also plastic bottles… Even if I gather just a mere gram of them, I feel I contributed (to environmental protection) (BI, p.2)

Mehri's emphasis on the "natural-organic" highlights her preference for elements that are derived from or closely aligned with the natural world. These included untouched landscapes, organic food produced without synthetic additives or genetic modification, and materials that are environmentally friendly. Mehri's concerns about artificiality likely stem from the perceived negative consequences associated with these elements. She seemed to be worried about the potential health risks posed by pollutants in the air, the long-term effects of genetic modifications on ecosystems and human health, and the environmental consequences of widespread plastic waste and its impact on wildlife and ecosystems.

The focus of instruction and discussions consistently revolved around human beings as the central and primary consideration when addressing environmental topics. The activities, materials, and teacher-student interactions primarily emphasized human impacts, needs, and perspectives, while other aspects of the environment, such as non-human species or ecosystems, received less attention.:

Once during a field trip, I witnessed one of my students drinking water and discarding the bottle near a tree… I explained to them that 'you broke the bottle, next time we come here this (a shard of glass) might pierce our foot. I think they understood it, collected the pieces… even started collecting others (bottles) until we returned (BI, p. 3)

At the basis of Mehri's teaching students behave environmentally friendly seemed to lay anthropocentric motives. By taking the opportunity to explain to her students the potential consequences of their actions, Mehri thought her explanation resonated with them, as they understood the importance of the situation. The teacher's objective was to instil environmental values by nurturing a sense of responsibility and an understanding of the connectedness of humans and the natural world. The use of the word 'connectedness' instead of 'interconnectedness' is deliberate as she acknowledged the human-environment relationship being 'unidirectional' - from the perspective of its effect on humans rather than being a 'bidirectional' one. Mehri seemed to focus much on how discarding bottles near trees creates visual pollution and affects humans overlooking a broader image – its effect on nature, wildlife and ecosystems.

Anthropocentric beliefs were evident during the observed classroom sessions. The extract below presents more insight into Mehri's beliefs about the environment:

I'm not sure if you're familiar with the 'Minamata' disease. There's a bay in Japan called Minamata… Mercury was released into the water from an industrial plant into this bay… The people who ate fish from that bay experienced paralysis… Since then, people continue to have this disease (CO3, p. 4)

Mehri's goal was to raise awareness among students about the devastating health consequences caused by industrial mercury pollution in Minamata Bay. However, the broader impact of mercury contamination on water pollution, the atmosphere, and the environment as a whole remained unattended.

As a strong example of it can be:

T. Can anyone explain the advantages of forests
S1. They contribute to our breathing… purify the air.
T. It is important. Can you add, please?
S2. They help various organisms to live, provide them with food.
T. You are right. Does anyone else have something to add?
S3. Forests add to the beauty of our country. Trees, plants, they are beautiful. And they help us to breathe.
T. it means they absorb carbon and release oxygen... (CO1, p. 1)

The dialogue between the teacher and students highlights the benefits of forests connected around the idea of being beneficial from humans' perspective - forests have a crucial role in purifying the air we breathe, they support the survival of diverse organisms by serving as a source of food, concluding with the understanding that forests absorb carbon dioxide and release oxygen. Although one of the students briefly mentioned the aesthetic appeal of forests, it did not receive much attention or emphasis in the discussion.

This observation suggests that an anthropocentric orientation prevails in Mehri's teaching approach and supports the notion that human interests and concerns are at the centre of the understanding and exploration of environmental issues within the classroom setting.

6.2.3. Reflection of the human-environment relationship

Mehri's anthropocentric beliefs mainly reflected two aspects of the human-environment relationship: a) the utilisation of natural resources – humans have the right to 'exploit' natural resources to fulfil their needs and desires; b) pollution as a major environmental problem – pollution resulted from human activities and poses detrimental effects on human health.

6.2.3.1. Utilisation of natural resources

The moral acceptability of using natural resources depended on how they were utilized, distinguishing between resources for individual and community use. The usage of resources for the benefit of the community was regarded as morally acceptable, whereas utilizing them solely for personal gain was deemed unacceptable. For instance, to Mehri, if we cut trees to build a new road or positively influence nature, it is considered good, but if I cut down trees to build a new house or building to make a profit it is not considered morally acceptable, even calling it a crime:

If I cut down trees to build a high building, it means crime… if my intention is to bring some positive changes, then I can do it (cut the trees down)… if traffic problems cause badly to humans, if they are late to work, even considering their car pollutes the environment more in a traffic jam, in this case, we can cut down the trees to solve the problem (BI, p. 8-9)

If resources are intended to serve the collective, then their utilisation is justified. Constructing a road benefits society as a whole, with unrestricted access benefiting all individuals. However, building a house is intended for personal use and does not have a universal positive impact which makes using resources solely for individual purposes morally unacceptable.

The value of natural resources unfolded itself to serve all humans' well-being when Mehri talked about the benefits of "Naftalan oil" that could be used by everyone:

Some of the natural resources even are used for treatment. For example, 'Naftalan oil' is used for therapeutic bath to treat skin diseases, arthritis, and various other conditions (BI, p. 11)

Utilisation of natural resources was a recurrent topic during class teaching:

T. How do we use forests? Forest materials, who can explain?
S1. We make tables
T. It means in the furniture industry. What else?
S2. In making papers
T. Yes...
S3. We make tools
S4. We make ships, houses
T. Do we use them as firewood?
Ss. Yes
T. So we use forests in construction, as firewood, papers, etc. (CO1, p. 2)

The dialogue captures the diverse range of applications for forest resources, including both practical and functional uses emphasising the importance of forests in providing materials for various industries and meeting essential needs.

6.2.3.2. Pollution as a major environmental problem

Mehri's beliefs of protecting the environment were mainly associated with eradicating pollution, not focusing much on the depletion of natural resources, loss of biodiversity, deforestation or other environmental problems. She seemed to believe pollution was a major environmental problem and believed that by tackling pollution, the environment could begin to recover and regain its balance.

It is important to protect the environment for the well-being and health of humans, to save humanity. We need to make sure the environment is not polluted (BI, p. 4)

Her beliefs of pollution of the environment were not limited to littering as it was in other cases of this study, air pollution was one of her major concerns.

The most polluted city of Azerbaijan is Sumgayit. It is not about visible litter or waste strewn across the streets, but rather about the contamination of the air due to chemical plants that the city used to have… The effects of this pollution can be observed in the atmosphere above Sumgayit, where the presence of pollutants is evident… (BI, p.4)

While talking about how developed and developing countries make use of natural resources she used the word 'exploit' but not utilise which informs her awareness of human negative effects:

… to exploit natural resources they (developing countries) use surface mining while extracting natural resources, they do it kind of spontaneously, tend to get everything they come across. But developed countries exploit natural resources by using underground mining... (CO3, p.2)

Technological advancement was seen as one of the ways of tackling environmental challenges. Mehri had both positive and negative views about the effect of technological advancements on the environment. On one side she appreciated the convenience and benefits that technological tools bring to our lives, while also recognising the potential negative consequences they can have on the environment.

New heating systems are the achievement of technological improvements. We used to heat our rooms with old wood stoves. Where did we get the wood? We got it from the forest, which means our negative impact to environment. But now, whole building is being heated by energy… but we have not been able to achieve this in rural areas, and we continue to deplete our finite resources and pollute the environment… (BI, p. 10).

Mehri seemed to acknowledge technological advancements have led to increased efficiency and was concerned about cutting down the trees which she consequently related to depletion of resources and pollution. However, she seemed to overlook the fact that by using new heating systems we continue to negatively impact the environment again by increasing our carbon footprint.

She also noted the role of technology in sustaining renewable energy sources. To her, technological developments have facilitated the growth of clean energy alternatives like solar, wind, and hydroelectric power that can reduce our dependence on fossil fuels and mitigate air pollution.

Solar, wind, and hydroelectric power stations – these are infinite resources. It is one of the greatest tools to protect the environment… constructing and using these facilities doesn't cause environmental pollution. But their construction is expensive, not all countries can access it, it is developed countries that can manage their construction… (BI, p.9)

6.3. Beliefs about teaching about the environment

Similar to earlier cases with Jamila, Mehri also appeared to emphasise teaching theoretical knowledge, followed by practical examples;

I make sure besides the knowledge that they get through the textbook, incorporate videos, maps, use materials from the Geographic Information System, to organise fieldtrips taking the kids out of the classroom and into the real world. If we don't have an opportunity to do it beyond school limits, we do with what's available at school. And when possible, we organise a trip to the Botanical Institute, a nearby park, or the Boulevard along the Caspian Sea so the children can see firsthand the diversity of plants and animals. Our schoolyard has plenty of trees and vegetation, and I want the kids to

see them up close, to learn about them, to love them, and to know how to protect them (BI, p. 12-13)

The knowledge delivery here seems to be holistic. It combines theoretical understanding, practical engagement, emotional connection, and ethical reflection. By integrating multimedia tools such as videos, maps, Geographic Information System materials and fieldtrips, the teacher engages various learning styles and enriches the theoretical content with dynamic, visual elements (see section 6.3.1. and 6.3.2. for more examples).

A similar strategy was observed during Mehri's class practices. When the topic of discussion was the movement of the Earth around its own axis and around the Sun, she first explained this concept, equipping students with the necessary knowledge:

The Earth moves both around its own axis and around the Sun. Look, this is the planet Earth, right? I'm going to show you how the Earth moves around the Sun (the teacher demonstrates this visually to the students using the model of Earth). Pay attention - the Earth moves both around its own axis and around the Sun. As it spins on its axis, it also... as it spins on its axis, what does it cause? Day and night. And when it orbits the Sun, what happens? The seasons… (CO2, p. 1)

After explaining the topic, Mehri assigned each student a planet and students role-played the movement of Earth. For the next class, Mehri instructed the students to conduct some research, gather brief information, and dress up as the planets they were assigned to for a role play they were planning to perform in the following class (CO2, p. 1-3).

She also aimed to encourage environmentally responsible behavior and foster practical skills through a variety of activities. In the extract below, Mehri shares her experience where she saw astudent discarding a bottle and used the moment as an opportunity to promote environmental responsibility:

Once during a field trip, I witnessed one of my students drinking water and discarding the bottle near a tree… I explained to them that 'you broke the bottle, next time we come here this (a shard of glass) might pierce our foot. I think they understood it, collected the pieces… even started collecting others (bottles) until we returned (BI, p. 3)

The students' reaction shows a change in behaviour towards becoming more environmentally responsible.

Promotion of behavior change was observed during classroom teaching. When Mehri held a lesson in the school garden, she spoke to students about the importance of protecting trees and animals. She also encouraged them to engage in practical actions such as collecting paper for recycling, building nests for birds, and repurposing plastic bottles into useful items (Section 6.3.3).

Mehri beleived various visual aids – models of volcanoes, mountains, the solar system, waterfalls, samples of rocks, maps, pictures, puzzle games, and different approaches such as role plays, pair and group work, essay writing, presentations,

and reading aloud were important while teaching about the environment and she constantly used them in class.

Mehri placed great emphasis on utilising a variety of direct and indirect approaches when teaching about the environment. She believed that different tools and methods offer unique benefits and enable a more comprehensive understanding of environmental concepts. Her stated beliefs expressed the importance of visual aids, direct engagement with nature, fieldwork, pair work, group presentation, essay writing, games, and role plays that were observed during her classes as well. Referred to as "active, participatory and experimental pedagogies" or "sustainability pedagogies" (Sipos et al., 2008; Sterling, 2013) the importance of such methods was deemed important for transformational learning still in 1990s (e.g. Tilbury, 1995) when environmental education started to attract attention and decades later when the field has witnessed extensive discourse amid ecological challanges (N. Evans & Ferreira, 2020; Grandisoli & Jacobi, 2020; Guerra et al., 2023; Sipos et al., 2008; Sterling, 2013). In his Guide to Teaching and Learning for Sustainability in HE, Sterling (2013) established a clear guideline on how to teach and learn about sustainability that can be useful not only for academics but for all in the education field who might be interested in ESD. He listed a number of methods of sustainability pedagogies that included role plays and simulations, group discussions and dialogue, stimulus activities (e.g. use of photos, videos, newspapers), fieldwork, and critical writing that he argues are important noting 'taking ESD further is often a matter of extending pedagogic diversity' (p. 38). Some of these methods were extensively used by Mehri which indicated her commitment to empower her students to critically reflect on sustainability issues and develop practical solutions.

Engaging in cognitive, affective, and behavioural activities that encompass the involvement of students' heads, hearts, and hands has a profound impact on transformative learning (Sipos et al., 2008). Wakefield et al. (2022) asserts that:

> Heads focuses on interdisciplinary content knowledge within sustainability; hearts provides opportunities for students to engage affectively, morally, and aesthetically with their environmental concerns; and hands includes practical activities that can be physically implemented by students (p. 4)

Mehri appeared to integrate the three dimensions of learning - heads, hands, and hearts by placing knowledge delivery at the core of her teaching about the environment. She believed that once students had acquired a solid foundation of knowledge, they could then actively engage their intellect, apply practical skills, and form emotional connections with the subject matter, which is discussed thoroughly in sections 6.3.1., 6.3.2. and 6.3.3.

6.3.1. Nature-based experiential learning – engagement of heads and hearts

It has been argued that individuals who have more frequent contact with nature tend to develop a stronger sense of connectedness to the natural world (Bezeljak et al., 2023; Brias-Guinart et al., 2023). One of the major factors that Mehri believed was important during knowledge delivery was the direct experience of students with nature and exploring their immediate surrounding. She considered geography to be a natural science, thinking teaching it without being in direct contact with nature would be less effective. To her, by experiencing the environment through direct experiences, students can see how ecosystems function and how human activities impact the environment.

We know that geography is one of the natural sciences. For this reason our major work is related to nature. Mountains, valleys, plains, plateau, natural zones, vegetation, animals – they are all integral parts of our subject. That is why we try to establish a direct connection with nature following the themes we learn. We celebrate the arrival of spring, observe germination of plants… we collect diverse soil samples, studying their composition, learning how to prevent their pollution, emphasize the importance of responsible waste disposal and actively participate in litter collection… I try to actively involve students to the protection of the environment (BI, p. 12)

Moreover, she seemed to believe the way to environmental protection goes through visualising: “I want them to see it, to learn, to love it and protect it” (BI, p.13). She seemed to believe that if students develop a love and appreciation for nature, they tend to form emotional connection with it that motivate them to protect and preserve what they have. Lawrence (2012) suggests that engaging in "appreciative outdoor activities" has the potential to create an emotional bond with the natural environment (p. 95)

Mehri seemed to believe direct contact with nature provided a rich and authentic context for learning which can foster a sense of stewardship and responsibility towards the environment. This aligns with what Petrou & Korfiatis (2022) suggested - engaging in outdoor interactive programs impacts participants' perceptions of environment. The significance of firsthand observation and engaging in physical activities lies in the fact that they encompass not just the entire body but also the mind (Bonnett, 2013). Engaging in outdoor activities that foster appreciation can influence how students behave towards the environment by altering their perception of the natural world and transforming their connection to specific locations (Lawrence, 2012). To Mehri, authentic context allowed students to engage their senses, fostering a multi-dimensional learning experience. To her, such sensory experiences can create lasting impressions, they can see the landscapes, feel the textures, hear the sounds, and even smell the scents.

I do my best so that students can see with their own eyes how the environment change... At least once a year I try to take students to Gobustan Rocks[1], Yanar Dag[2] so that they can personally witness these locations (BI, p.13)

[1] Gobustan Rocks is a state historical and cultural reserve with a collection of more than 6,000 rock engravings bearing testimony to 40,000 years of rock art (https://whc.unesco.org/en/list/1076/)

Moreover, Mehri believed field-works make learning more engaging and exciting, allow students to engage with real-world environments, develop their interest and curiosity, also contributing to their social development.

They were surprised to see how 'Yanar dag' was burning, they kept asking why does the mountain burn? does the flame extinguish? Why does it not extiguish? If it extinguish who fires it again?... or when our topic was 'Forests' I took the students to Guba[1] to observe the rich variety of trees in Azerbaijani forests, discussed trees that is usual for Azerbaijani forerts, compared them with Amazon forests, looked for similarities and differences. The trees were right before our eyes... Practical learning is quiet diferent (from traditional classroom learning) (BI, p. 14-15)

Mehri seemed to believe that encouraging and valuing students' questions while teaching about the environment and nature was crucial for promoting active learning, critical thinking, and deeper understanding. As a teacher, she could provide guidance, facilitate discussions, and help students find answers to their inquiries, fostering a rich and meaningful learning experience during the trip which was consistent with her enacted beliefs, though it was a visit to the school garden. For instance, she seemed to believe knowledge about forests from different regions contributes to students' local and global awareness, highlighting the diversity of ecosystems worldwide:

The Amazon forests are part of the hot and humid equatorial rainforest zone... This area is called the Selvas. You can actually find equatorial forests not just in South America, but also in Africa and Indonesia. The Amazon is full of really tall trees, thick greenery, and tons of different animals and plants. It's hot and rainy there almost all year round, which is why everything grows so well (CO1, p. 1-2)

Then she teaches students about local forests:

There are rich forests in the Greater Caucasus, Lesser Caucasus, and the Talysh Mountains. Now, the main types of trees that grow in Azerbaijan are... Let's make a note, kids - forests cover 11 percent of our country's territory… The main tree types found in Azerbaijan's forests are oak, hornbeam, and pistachio (CO1, p. 2)

Teaching students about Amazon forests and their key characteristic features, she links the next topics with Amazon forests, stating Amazon forests are "the lungs of our planet" and asking follow-up questions such as "How do we breathe?" "What would happen if we destroy them?" (CO3, p.7 and CO1, p. 1). She seemed to first deliver knowledge to students about Amazon and local forests and then direct students' attention to the importance of and gain a broader perspective on forest ecosystems and the interconnectedness of environmental issues.

[2]Yanar Dag is the state historical, cultural and natural reserve which literally means "burning mountain" with a constantly burning wall of flames (https://yanardag.az/).

[1] Guba is one of the regions of Azerbaijan with rich forest.

She arranged an event regarding ‘Earth Day’ where students had a class in the backyard of the school, where students had a chance to learn about different trees and their peculiarities. They also saw different domestic animals brought by their peers (Figure 21).

Figure 21. Students on Earth Day in the school garden.

With the slogans 'The World is our home' and 'Let’s protect nature' displayed on their backs, the students conveyed that Earth is our shared space. By adding the word 'home' – an area we always protect and feel safe in – they sought to convey the idea that the world should be safeguarded similarly to how we protect our houses. During the class, students examined different trees and domestic animals, asking questions of both the gardener and pet owners. The rationale for organising an outdoor class was, being in nature might help students develop a stronger connection with nature and appreciate the importance of animals and plants:

> My aim was to increase students’ awareness and interest in protecting the environment,... while also nurturing a love for animals and instilling in other students the significance of safeguarding living beings. Making nests in the trees was a demonstration of their care for nature. I wanted to convey the message that we need to actively participate, both directly and indirectly, in the protection of living beings. It is good that we learn about it, hear it, we talk about it, but we need to put it into action... (FI2, p.1).

6.3.2. In-class learning: engagement of heads

Knowledge delivery was central for in-class teaching as well. Mehri recognise the significance of incorporating visual aids within the classroom. To her, the videos she used in the classroom were valuable in terms of supporting the knowledge shared in the classroom and enabled students link knowledge they have acquired to the real world examples by having 'in-class fieldwork' and exploring areas that would not be possible through actual fieldwork, such as exploring other countries or volcanos.

If our topic is vegetation or animals, first I explain the topic, then I would use short video recordings to make 'in-class' fieldtrips for the students. Videos can bring real-life examples into the classroom. They make abstract concepts more tangible (BI, p. 12)

During class practices, Mehri used a variety of methods and tools in class she shared during the interview. First, she would focus on fact-based learning about geography, geographical concepts, the environment, environmental problems, the environmental problems that are caused by humans, the ways of mitigating these problems, etc. and then would employ an activity for the students to better comprehend the topic.

Role play was one of the methods used by Mehri (as discussed in 6.3. p. 162). Her rationale for using role plays was that it involves active learning in a fun and interesting way that leads students to better understand the concept they were exploring (RI2, p.2).

Another strategy Mehri employed involved critical writing. Before engaging in essay writing, she initiated discussions with the students, informing students about environmental problems, their individual roles in environmental pollution and the significance of collective participation in environmental protection. Following these conversations, she assigned the students the task of composing an essay regarding their personal contributions to environmental pollution and protection (CO3, p. 6). By initiating discussions and assigning essays on this topic, Mehri aimed to prompt students to critically evaluate their own behaviors and contributions to environmental pollution, fostering a deeper understanding of the interconnectedness between individual actions and broader environmental issues.

While teaching year 6 and year 7 students, she used puzzle games. According to Mehri puzzle games were one of the most beloved activities of students as they were both fun and educational. To her, solving puzzles could reinforce learning by challenging students through active engagement with the subject matter.

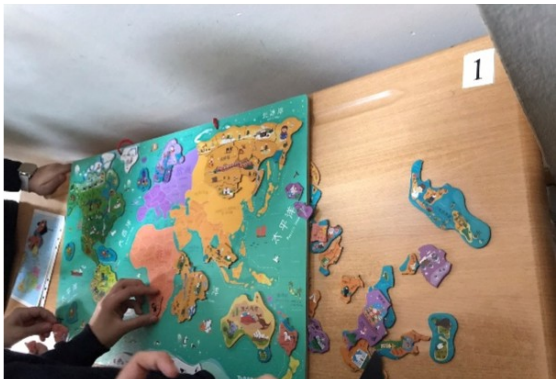

Figure 22. Students engaged in puzzle-solving

During classes, students did different types of puzzles to help them understand spatial relationships (such as matching countries with their location) and raise their awareness of animals and vegetation of different countries, as well as endangered species (such as matching animals and vegetation of different continents) (Figure 22)

6.3.3. Physical activities – engagement of hands and hearts

Mehri believed that plastic bags and bottles were particularly problematic, specifically voicing her concern about their impact within the broader context of environmental issues. She likely recognises the adverse effects associated with the production, usage, and disposal of these plastic items.

I am concerned about the usage of polyethylene bags… also plastic bottles. The creation of just one square meter of soil typically takes around 100 years. However, polyethylene bags do not participate in the natural decomposition process, and it is estimated that they may require at least 400 years to break down… I always try to teach this to my students and instill my students with the desire to protect the environment… they take part in collection of plastic bottles, plastic bags and waste paper… Even if we gather just a mere gram of them, I feel I contributed (to environmental protection) (BI, p.2)

During classes, I observed Mehri's efforts to teach students about the importance of recycling and instill a sense of environmental consciousness and creativity in her students through the collection, recycling, and creative reuse of materials like paper and plastic bottles. It is argued that while paper is often considered essential for educational purposes, its material properties may not receive much direct pedagogical attention, instead, the focus is usually on the content printed on the paper, the resources and information it carries, and the convenience and practicality it offers (Merewether et al., 2023). However, Mehri seemed to place an extra value on paper by involving her students in extra activities to collect used papers, recycle and reuse. Several times a year they collected used notebooks and papers with the student to recycle them. When I first met Mehri, there was a pile of used copybooks in the classroom ready to be sent for recycling. She also encouraged her students to explore different aspects of papers and find beauty in them - to transform ordinary paper into something beautiful to emphasize the importance of repurposing materials rather than discarding them (figure 23).

Figure 23. A flower from a paper made by students

Turning to plastic bottles, Mehri took the initiative a step further by encouraging her students to think creatively about how to repurpose them. By challenging them to come up with innovative ideas for reusing plastic bottles, such as turning them into pencil case (Figure 24), Mehri appeared to encourage the students to think outside the box, explore different possibilities, and find new uses for materials that might otherwise be discarded. Moreover, she inspired their creativity, imagination of her students to contribute to environmental awareness.

Figure 24. Pencil case made of plastic bottle

By engaging students in the creation of bird nests (Figure 25) on Earth Day and asking students to bring their pets to school, Mehri seemed to foster a sense of empathy, care and responsibility towards the natural world by involving their ‘hands’ and ‘hearts’. Through a range of outdoor class activities, they observed the germination of trees, constructed dog houses, and fostered a sense of care by introducing their pets to their peers.

Figure 25. Bird nests made by students

The students collected and brought different samples of rocks in the classroom (Figure 26). To Mehri, physical samples of rocks provide a hands-on experience for students to observe and study different rock types. By examining their texture, colour, and composition, students can learn about the rock cycle, geological processes, and how different rocks are formed (RI1, p.2).

Figure 26. Rock samples collected by students

Moreover, students used to make models of volcanos, the Earth (Figure 27), waterfalls and forests. The rationale behind students' making models of different geographical notions was that they learn while they create by their hands. For instance, models of volcanoes allow students to visualize the structure and behaviour of volcanoes. (By making the model of Earth) they can see the different layers of Earth and better understand (RI1, p.3).

Figure 27. Model of volcanos and Earth made by student

6.4. Conclusion

Answering to the research questions it may be concluded that:

1. What are secondary school geography teachers' beliefs about the environment and teaching about the environment? Mehri's beliefs about the environment were anthropocentric, placing humans at the centre of environmental concerns and focusing on its impact on human well-being. With much focus on knowledge delivery and fact-based learning, her teaching beliefs involve employing a variety of methods, approaches, and tools to engage students intellectually, emotionally, and behaviorally.

2. In what ways are teachers' beliefs about the environment and about teaching about the environment enacted in their classroom practice? It could be observed that Mehri's stated beliefs about the environment largely corresponded with her observed beliefs. During background interviews and observations, it was evident that her beliefs predominantly leaned towards anthropocentrism. This suggests a consistency between what she taught and how she actually perceived the environment. Furthermore, the teacher's beliefs regarding teaching about the environment were found to be in complete alignment with their classroom instruction. This harmony between the teacher's beliefs and their actual teaching practices suggests the teacher deemed important the use of variety tool for effective environmental education that she brought to her classroom teaching as well.

Chapter 7. Asli

The chapter presents the fourth case in the study – Asli, who was a geography and STEAM teacher at the time of data collection. While the structure and analytical approach remain consistent across all cases, the differences in belief orientation, focus, and approach to environmentalism contribute to a nuanced understanding of how Asli conceptualises and enacts her beliefs. As in earlier cases, the presence of anthropocentric beliefs in Asli's views on the environment was observed as well, while she presented a more balanced perspective, integrating both anthropocentric and ecocentric beliefs. In the first three cases, the teachers' beliefs about the environment primarily revolved around themes such as human-centeredness and romanticism, while this case portrayed a broader and more inclusive perspective that valued all living and nonliving entities.

The chapter is divided into two sections and several subsections. The first section explores the teacher's stated balanced anthropocentric and ecocentric beliefs and their alignments with observed beliefs while section two focuses on beliefs about teaching about the environment, how they are reflected in teacher's practices and the alignment between the two.

The major findings that emerged from the data analysis regarding research questions 1 and 2 were:

- Asli seemed to have an expanded and balanced view of the environment; her anthropocentric beliefs of the environment were intertwined with her ecocentric beliefs where she placed the highest value on all living and nonliving entities, including not only humans but also animals, plants, water, and soil; Asli's stated beliefs about the environment aligned with her observed beliefs; Stated beliefs are addressed in Section 7.2, while their enactments are discussed in subsection 7.3.3 since her anthropocentric and ecocentric beliefs were clearly reflected in her class activites which is part of my research question 4 . Asli's envrionmental beliefs were revealed during various class activities, which also contribute to her beliefs about teaching the environment;

Research questions 3 and 4 are addressed in section 7.3. where key findings were:

- Besides focusing on knowledge delivery, Asli was also concerned about building emaotional connection with environment and instilling pro-environmental behaviour; Asli employed variety of direct and indirect learning strategies; her stated beliefs about teaching about the environment aligned with her observed beliefs;

One background interview, four observations, two recall interviews (covering four observations), and one final interview were conducted with Asli, for which I will provide detailed descriptions below.

7.1. Personal and professional background

Asli's childhood memories of nature were far from being heartwarming. She was brought up in the region known for its arid climate – Yevlakh, where they usually experienced heatwaves, scarce rainfall, and salted soil that constantly reminded her of the harsh realities of the challenging environment: "We always feared it (nature) would harm us" (BI, p. 5). Her interest in geography developed in year 9 when she started the economic geography course where they explored different countries, their areas, cultures, nations and other characteristic features. On top of this, history classes and the history teacher combined Asli's love for nature and geography. The use of visual aids during classes, such as maps, the teacher's positive qualities such as the ability to listen and guide students, going beyond the limits of textbooks and history and her advice to refer to complementary curricula to explore the world triggered Asli's love for geography (BI, p. 3-4).

> We had 'Ayna' encyclopedia for the kids in our library. It had a lot of interesting information about Earth, biology, plants under the title 'It is interesting to know'. I used to borrow the book and the librarian who noticed me borrowing the book every often and now even gave one of them to me as a gift… I still remember the information I read about the Earth, nations, their peculiarities… (BI, p.3)

Asli's initial career choice was not to become a geography teacher but rather a geographer. She loved to explore different countries, the physical features of Earth, and human-nature relationships (BI, p.3) and had a university degree in Geography. Due to the challenges of pursuing a career as a geographer in our country, coupled with family responsibilities and the need to balance work and family life, she ultimately decided to change her profession and enrolled in a 6-month course to become a geography teacher (BI, p. 2).

In addition to being a geography teacher, she also taught STEAM classes. She emphasised the interdisciplinary nature of these subjects and connected STEAM classes with geographical concepts. In her STEAM classes, students engaged in activities like constructing air balloons and catapults. Through these projects, they explored atmospheric conditions and weather patterns and learned about how differences in temperature and pressure affect the density of air, leading to the lift needed for a hot air balloon to float or shoot stones (BI, p. 1).

7.2. Beliefs about the environment

7.2.1. Conceptualisation of the environment – environment as a shared space

To Asli, the environment was everything that surrounded human beings (BI, p. 7). Considering the word 'surround' comes with a meaning 'to enclose on all sides' (Merriam Webster, n.d.), at the centre of her conception of the environment seemed to be humanity with an environment all around them. This view seemed to place humans at

the centre of the universe, contributing to the concept of ‘man as the measure of all things’ (Fawcett et al., 2002, p. 227), asserting that human values, needs, and interests are the ultimate criteria by which all things should be judged or measured.

> Environment is everything that surrounds us. It is living and non-living elements. Environment means my whereabouts and everything that surrounds me. There can be natural or man-made objects… (BI, p. 7)

The concept of ‘surrounding’ seemed to be linked with the notion of ‘sharing’ where humans shared their surroundings with other living and non-living entities. Asli further added:

> If I were to draw a picture of it, I would include a house, people, a garden, flowers, trees, the place where I am, and everything around me. I would also add the Sun, some sheep, lambs, hen and chickens. I would depict my living place (BI, p. 7)

‘Shared surroundings’ that seem to imply a ‘shared environment’ or ‘shared nature’ acknowledge the interdependence of all living and non-living entities. This resonates with Fawcett et al. (2002) who characterised the environment as more than a 'surrounding’ and relating it to 'sharing' and 'more-than-human neighbours’:

> Students often discover that they are sharing their community with a wide variety of life forms, from mice and spiders in their homes, to various birds in their backyards, to raccoons in ravines, to worms along a pathway to school, to wildflowers struggling to survive in an abandoned parking lot… many students readily admit that in the hustle and bustle of daily life, they rarely notice their more-than-human neighbours. (p. 228)

The paragraph above asserts that, though students may not recognise, the environment is a shared space, and the actions of one entity can affect the well-being of others, which aligns with Asli’s beliefs about the environment.

To Asli, humans seemed to have a particular space in this shared environment: “it also includes humans, since it encompasses everything around us, there should be humans too” (BI, p. 7). The use of the phrase "it also includes humans" implies an acknowledgement that humans are integral components of the environment, not separate entities. However, not all teachers see humans as part of the environment. For instance, the study conducted among 463 pre-service primary school education and preschool education teachers in a neighbouring country, Turkey, found that nearly thirty-two per cent of teachers excluded the human element (Ahi et al., 2017). This figure doubled in the context of USA where sixty percent of teachers did not see humans as integral to the environment (Moseley et al., 2010). In Israel's context, only a few preservice teachers noted humans as an integral part of the environment (Yavetz et al., 2014).

To Asli, the shared perspective of the environment seemed to have distinct borders - a boundary separating the place that surrounded her from the wilderness. Within her perception of the environment, she seemed to have no link to wildlife. Her description of the environment was mostly the reflection of ‘man-made’ environment. It

included plants – flowers, trees but they seemed to be grown by humans. She also noted animals, but they were all domestic animals: either kept to please humans or raised for their meat and eggs. The teacher's belief is consistent with the previous research where more than half of pre-teachers indicated built or designed environment as their mental models of environment (Desjean-Perrotta et al., 2008; Moseley et al., 2010).

More than viewing the environment as natural resources she appeared to perceive it as 'relations' with the surrounding: "the environment is an influence of human to it (environment) and its (the environment) influence to humans, they are mutually bonded" (BI, p. 7). However, this relationship was viewed from a negative perspective from both sides:

> An example of the effect of the environment on humans is that if it is hot, it can negatively affect humans, or in an extreme cold a man can die… Deforestation is the negative effect brought by humans on nature… when we cut down trees, the soil is exposed to excessive sunlight, local springs may dry, wildlife may disappear, no trace may be left of forests. But most importantly, it can result in a loss of rest areas. Secondly, trees are the source of oxygen, they are our 'lungs', we lose our oxygen resources… for sure, here the human impact is more noticeable than nature's impact on humans (BI, p.7-9)

The paragraph above reveals some of the important aspects of Asli's beliefs about the environment. First, Asli's perception of 'mutual relationship' appears to be shaped by a predominantly negative perspective. This may be linked to her childhood understanding of the environment – growing up in a region that frequently experienced heatwaves could have left a lasting impact on Asli's perception of 'mutual relationship' shaped by the experience that:

> Yevlakh is a hot area, it is hot in summer, cold in winter… the soil used to be salinated, now melioration processes are taken place, this was not the case when we were kids… we faced challenges of getting drinkable water … As it was very hot in summer scarce rainfall caused delays in farming activities... we always feared it (nature) would harm us. (BI, p. 5)

A negative environmental perception was observed during school years as well: "there was nothing interesting in our region for field trips, we visited neighbouring regions" (BI, p. 7). Secondly, she characterised the human-environment relationship as a circular one. This relationship is more complex than just mutual impacts between humans and nature; it forms a continuous cycle. Nature provides resources to humans, human activities affect nature, and in turn, nature can respond negatively by depriving humans of its resources, e.g. resting places and oxygen. Third, Asli's beliefs about the environment were anthropocentrically oriented, the ultimate goal of preservation seemed to promote the well-being of humanity: deforestation has led to the loss of resting places for humans and a decrease in oxygen levels. Asli puts it as: "human impact on environment is indirectly what humans do to themselves" (BI, p. 7). However, she also held ecocentric beliefs that I examine in the next section.

7.2.2. Anthropocentric and ecocentric beliefs

Asli was concerned about nature and its elements and her protection beliefs seemed to entail instrumental value. She acknowledged the importance of protecting plants and linked it to the well-being of humanity:

> We need to think about future. Let's say if any plant is used to make medicines, we extinct it. Today we produced that medicine, what will happen in three days? (BI4, p.11)

She was concerned about the importance of protecting plants however this was linked to the medicine production – no plant, no medicine for humans.

Another example can be the extract below:

> We don't need to exhaust all the resources… it is about natural resources, forests, soil… If we want to construct an apartment or any other building, doing it at the expense of reducing crop-growing areas is not quite reasonable (BI, p. 11)

As the paragraph shows, Asli believed it was important to protect the environment, she was aware natural resources were finite but seemed to have deep-rooted anthropocentric beliefs. She did not suggest ways of improving construction to protect limited natural resources but focused her preservation efforts on crop-growing areas which benefit humanity.

Though Asli held anthropocentric beliefs she tried not to give privilege to humans over other entities and held ecocentric beliefs as well. She believed that every species had a vital role to play in maintaining the balance of our ecosystem:

> Generally, I don't consider humans to be superior to other entities. Most of the trouble arises from places where people reside. What harm do the natural elements bring? They may fight, but they have their harmony, and live symbiotically (BI, p. 9)

The paragraph above seems to highlighting tension between Asli's childhood and current beliefs about the environment. While discussing her childhood memories, she viewed nature as potentially harmful to humans. However, as she reflected on her current beliefs, it appeared that she no longer saw nature as having the potential to harm humans.

While speaking about human superiority she used the word 'propaganda' to describe the essence of her belief. She believed that the idea of 'human superiority' over other entities was not based on inherent facts but was instead a long-standing propaganda. Thinking 'propaganda' is a word with a negative connotation and is defined as "the spreading of ideas, information, or rumour for the purpose of helping or injuring an institution, a cause, or a person" (*Merriam Webster*, n.d.), her message conveys 'manipulation' by humans about their being more advanced than other living beings or entities.

> We have overused the concept of 'human' just because of them being conscious. It is a propaganda that has been going on and on for many years that humans are the most conscious entities. Recently the word 'being conscious' has become the word to be said in quotation marks. Consciousness has been disappeared (BI4, p. 11)

Another tension emerged when Asli noted human intentions to change the environment: “It would be better if humans did not change nature to meet their needs” (BI, p. 11). Asli's viewpoint, as noted in this statement, highlights a perspective on environmental stewardship. She emphasizes the importance of not altering the environment solely to satisfy human needs. On one hand, Asli supported the viewpoint that natural resources are to be used by humans and on the other hand she believes humans need to control their behaviour.

> The development of new technologies resulted in we are doing everything we want and it (nature) undergoes transformation, naturalness is lost. We need to stop… the development of industry and technology affect human health, their leisure… (BI4, p. 10)

As part of her anthropocentric beliefs, Asli hold utilisation beliefs and acknowledged that humans, like all living creatures, depend on natural resources for survival by saying “From the very first day, humans have been nourished by the natural environment, its elements” (BI, p. 12). Instead of viewing the utilisation of natural resources as harmful, she emphasized the importance of maintaining a balance between utilisation and restoration:

> We had lots of trees in our school garden. Pine trees, fir trees. We used to collect their cones and cleaning ladies would put them in the stove to heat our classroom (BI, p. 5).
>
> It is a natural process… Humans need to cut down trees from time to time to meet their needs. But in one condition, that to plant a new one (BI, p. 9)

From an anthropocentric viewpoint, the acknowledgement of human needs and the necessity of cutting down trees suggests a recognition of the importance of trees for meeting human requirements. Moreover, planting a new tree indicates a sense of responsibility towards the environment, aligning with ecocentric values and recognising the interconnectedness of ecosystems and the importance of maintaining natural resources for the well-being of both humans and the environment. However, she also acknowledged that planting a new tree whenever one is cut down may not always be a good practice or be effective in the same way:

> It is true that it takes years for a tree to grow, not to mention an entire forest. Will it truly benefit us if we cut down the trees? If so, to what extent will this benefit us? All of these factors need to be carefully considered (BI, p. 9)

She recognise the critical role trees play in maintaining ecological balance and acknowledged the unavoidable and expected outcome of planting new trees in the place of old ones. This reflects ecocentric beliefs by emphasizing the importance of considering the long-term impacts of human actions on the natural world. The focus is not solely on the immediate benefits to humans, but rather on the broader consequences for ecosystems and the environment as a whole. By questioning the potential benefits of cutting down trees and urging careful consideration of all factors, including those beyond human interests, the passage aligns with ecocentric values, which prioritize the well-being of the entire ecosystem over individual human needs or desires.

I will discuss the alignment of Asli’s anthropocentric and ecocentric beliefs with her enacted beliefs in the subsection below 7.3.3, as they are part of her observed

beliefs and logically follow in-class and out-class activities. As it is intertwined with the class activities and reflected in the activities such as role-playing and visiting parks, I decided not to pull them out of their context and give a clear description of these activities before discussing her environmental beliefs revealed through these activities.

7.3 Beliefs about teaching about the environment

In this section, I'll explore Asli's stated and observed beliefs regarding teaching about the environment, examining how these two aspects are interconnected and whether her stated beliefs influence her teaching practices. I'll begin by highlighting general patterns observed during interviews and observations. Then, I'll provide examples from interviews that illustrate these patterns and support them with observations. Finally, I'll draw conclusions about the alignment/non-alignment between Asli's stated and observed beliefs.

The content of Asli's teaching focuses on knowledge, as well as on pro-environmental behaviour and practical skills. She believed that delivering knowledge alone was not sufficient; it needed to be supported by activities that promote behavioural development:

> We need to teach students about the environmental problems and their consequences. But I think it's not enough to just teach students about the consequences of littering the environment, we need to show them how that litter can directly affect their own lives. Like, if you do this, here's what can happen. Otherwise, we just say the same standard phrases 'don't litter' and pass on the information... Everyone can hear the same message, but not everyone processes it the same way. If we can even act it out somehow and show the consequences in a real, visual way, I think they'll start thinking more about how it affects them (BI, p. 16).

The extract emphasises Asli's dual approach to teaching about the environment. On one hand, there is a focus on delivering knowledge about environmental problems – 'we need to teach students about the environmental problems and their consequences' which highlights the importance of cognitive understanding. Moreover, Asli goes beyond simply imparting information, stressing that knowledge alone is not sufficient. Instead, she believes a behaviour-oriented approach is important, saying 'we need to show them how that litter can directly affect their own lives.' This shifts the focus from knowledge to personal relevance and behavioural impact. The use of practical strategies, such as 'acting it out' or making consequences visible and tangible, supports the development of pro-environmental attitudes and behaviours rather than just knowledge delivery.

One of the best examples of Asli's integration of both environmental knowledge and pro-environmental behaviour emerged during a class she held in the park. There, students role-played a story they had created in a previous lesson about the importance of trees and their protection (see Section 7.3.3). In earlier classes, Asli had taught students about different types of trees:

Needle-leaved trees are the ones that can handle the cold. Have you seen pine trees? Have you seen their leaves? They look like needles, right? Why do you think that is? It's because they change their leaves to protect themselves from the cold. But trees in warmer areas usually have big, broad leaves. In our region, here in Azerbaijan, most trees have large leaves. So, what are the trees like in the coldest areas? They have needle-like leaves (CO1, p. 4)

The field trip then provided an opportunity to build on that knowledge through active engagement, as students brought the lesson to life by dramatizing the importance of protecting trees.

Though building practical skills was not part of Asli's stated beliefs, they came up during classroom practices.

Since Asli believed in the importance of fostering pro-environmental behaviour alongside academic knowledge, these aims were central to both her direct and indirect teaching activities and are discussed in detail in the following sections. Despite limited resources and support from the school, Asli was committed to using a variety of direct approaches, such as discussions, storytelling, role-playing and indirect approaches such as park visits and planting stating 'A teacher can do a lot. We can go on field trips, step outside the classroom, and the kids can see where the waste is. We can clean up those areas together' (BI, p.19). I discuss the approaches Asli employed in the next three sections.

7.3.1. Learning through verbal communication: Discussion and Storytelling

Asli believed communication with students that goes beyond lecturing was a powerful tool to instil students with environmental values. Though Asli considered textbooks as a powerful source of knowledge, she thought the study of the environment should not be confined to textbooks. She believed in the power of discussion, thoughtful and candid conversations about environmental issues to help students develop empathy and put themselves in the shoes of others and gain a deeper understanding of them:

If I just say, 'Students, please do not litter,' this might have little effect. However, when I engage in an emotional conversation with them and ask them to consider the cleaning lady as someone close to them asking 'Would you want her to collect all the litter?' – it appears to be more effective… (BI4, p. 16)

One important aspect, as presented by Asli, is the establishment of an emotional connection with nature while teaching and learning about the environment. To her, besides implementing practical measures, such as reducing waste or conserving resources, developing a personal and emotional bond with the natural world was essential. The paragraph highlights the effectiveness of using emotional and personal connections in communication, particularly when addressing behavioural issues like littering. Asli recognise that simply saying 'Students, please do not litter' may not evoke a significant response from the students while engaging in emotional conversations can be helpful.

Discussion. During her classes, Asli seemed to create an interactive learning environment within her classroom through discussions. While teaching year five students about the influence of the ecological environment on living entities (CO1), she first started to get students' perspectives on how the environment affects living entities and based her lecturing on bilaterial communication with students prioritising interactive dialogue over monologue:

> T. How do you think the environment influence living entities?
> S1. Living beings that are used to live in cold (areas) can die in hot (areas)
> T. True, what else?
> S2. Smokes from the factories influence both humans and animals.
> T. That's deterioration of ecological balance.
> S3. Fish live in water, if we take them out of water, they will die.
> T. if they change their environment they can't survive. (CO1, p. 1)

After getting the students' initial responses, she noted a few points to students about the topic and then asked one of the students to read some passages from the textbook. After the student read a few sentences, she stopped the student and asked them to share their ideas about the passage. By saying "Try not to bring the arguments that you have in your textbooks, but bring your own arguments" (CO1, p. 3), she encouraged her students to actively participate and share their own ideas about the causes of environmental issues. Her approach was not limited to just fostering discussion; she challenged her students further by inviting diverse viewpoints and opposing arguments.

> T: How does the atmosphere get polluted?
> S1: as a result human activities
> T: Can you elaborate?
> S1: by the smoke of cars
> T: But we can without cars
> S1: We can use electric cars
> S2: They can cycle to school
> T: But not everyone can afford to buy electric cars or bicycles
> S3: They should do at least what they can, like protecting trees (CO1, p. 2)

By challenging students' answers, Asli seemed to foster a classroom environment where open dialogue and discussion were encouraged. It also encouraged them to think critically and teacher prompts helped them to analyse their own reasoning which can lead to a more thorough understanding of the topic as students are prompted to reconsider their initial responses and explore alternative perspectives.

> St 1: What can we do to clean up cigarette waste in our surroundings?
> St 2: Penalties should be enforced.
> T: Do you believe the problem would be resolved through penalties?
> St 2: If there's a 50 AZN penalty, no one will litter with cigarette waste.
> St 3: We need more bins.
> T: Yes, we can place additional bins in visible locations.
> St 4: Cigarettes should be banned.

T: Do you think a ban could be a solution? Something similar happened in the past when cigarettes were banned, but people began using tree roots, which harmed both the environment and their health.
St 5: Special controls should be implemented.
St 6: We need to design cigarettes that produce no waste.
T: Do you think everyone can afford to buy such cigarettes? (CO2, p. 1)

By challenging students' responses, the teacher encouraged her students to go beyond their usual thinking. When a student suggested banning cigarettes, she countered with a strong argument: that banning cigarettes could harm trees. This encouraged her students to think out of the box. By exploring immediate practical solutions such as enforcing penalties, increasing bins, and implementing special controls, further exploration of the topic led students to consider long-term approaches and suggest a long-term solution such as designing eco-friendly cigarettes. Moving beyond environmental pollution, the teacher expanded the topic to note the relationship between environmental and socioeconomic factors, bringing attention to the potential financial barriers that could limit the adoption of eco-friendly alternatives. Although, in some cases, the course of discussion extended beyond the initial topic's boundaries, these discussions, which challenged students, enhanced their critical thinking abilities. Furthermore, they provided students with insights into the complexities of environmental issues and the complicated relationship between the environment and society.

Storytelling. Though not mentioned during the background interview, storytelling, which can "help educators pay attention to children's theories, dreams, and fantasies through our pedagogies" (Sherfinski et al., 2022, p. 630), was another strategy used by Asli to encourage students to go beyond the textbooks and use their imagination. To Asli, it helped them to improve their communication, critical thinking, and creativity skills. As part of the exercise, Asli instructed her students to compose stories for their role-playing sessions in the park. In one of the classes, the context of story was discussed where Asli encouraged students to generate their own content. One of the students was asked to collect all the ideas from the students, write them down and share with whole class for further discussion (CO3). During later classes (which I did not personally observe but I observed the role-playing class in the park) students refined the context and students were allocated different roles. Storytelling was a collaborative activity where students worked together to create and perform stories.

7.3.2. Learning through visual demonstration

Asli noted the importance of visual demonstration while teaching about the environment and environmental problems. During the interview, she noted the power of showing rather than saying or telling students about the environment. To her, teachers should not just talk to the students about the consequences of the negative impact of humans on the environment as not all the students can process the same information

the same way. Moreover, it was important to show the consequences of human actions and actively involve them to contribute to environmental protection. When we ask the students not to throw trash around, some of them get it, but not everyone processes that info the same. When they see someone throwing rubbish, they might just copy it. But if we dig deeper – what consequences they might face, what could happen if they continue littering… if we get students to role-play, put themselves in that situation, then I think they might start thinking that it could harm them (BI4, p. 16). By considering individual differences that not all students process information the same way, by discouraging negative role models, emphasising consequences, and incorporating active learning techniques like role-play, she aims to engage students in a meaningful way and encourage them to make better choices regarding littering and its consequences.

Recognising the impact of demonstrations on students' understanding of the environment, Asli illustrated the various types of soils through practical demonstrations. While learning about the structure and characteristic features of different types of soil, Asli asked students to bring water, a cup and a soil sample (CO4). The students conducted an experiment in class using the soil that they brought from their yards/gardens. They mixed different types of soil with water to observe how different types of soil dissolved in water and later discussed factors that cause these differences (Figure 28).

Figure 28. Soil samples collected by students

Following their soil experiment, Asli had a discussion with students about the soil formation process and the human activities that both hinder soil formation and cause soil pollution.

7.3.3. Learning through active participation

Asli also believed in the importance of active participation while teaching about the environment. Adding "Yet, nothing proves more effective than experiencing it firsthand" (BI4, p. 17) she stressed the importance of making environmental protection their habit by asking for their individual contributions by acting.

If conversation and discussion do not help, I ask them to clean up what they have done. They do it proportionally, and when they know they will end up cleaning it themselves, they won't do it anymore. I have observed that some students can draw conclusions from what has been explained to them, but for others, they need to practically experience it to make it a habit (BI4, p.17)

During the classes I observed, active participation was facilitated through activities such as planting trees and role-playing, particularly during students' visits to the park. While these techniques may appear distinct, they formed interrelated components of Asli's outdoor lesson: students visited the park, planted flowers and engaged in role-playing scenarios focused on tree protection. Below, I will discuss each of these teaching methods individually, highlighting their role in fostering active outdoor participation.

In this section, I will also discuss Asli's environmental beliefs, particularly her anthropocentric perspective, which became evident during the park visit. This viewpoint was especially apparent during the role-playing exercises, where Asli guided and corrected her students throughout the rehearsals and where the focus was consistently on human safety. Given that Asli's anthropocentric beliefs were closely integrated into the exercises below, I have decided not to extract her beliefs from this context and will discuss them within this section. Visiting parks. Although teachers usually tend to use methods such as lectures and are less likely to employ field trips, outdoor activities and role-playing (Ko & Lee, 2003), Asli seemed to believe that "actions speak louder than words". She had classes beyond the classroom, organizing field trips to local parks. To her, these excursions allowed students to witness the beauty of nature, the consequences of environmental degradation, and the importance of efforts being made to protect it. She tried to make the geography classes more interactive, students' efforts tangible and relatable by showing her students the real-world implications of their actions as planting trees and flowers.

Field trips are considered an important tool for the education 'in' the environment by the teachers (Ko & Lee, 2003). Local field trips facilitate students' knowledge of their region (Fawcett et al., 2002). The objective of visiting parks is seen by teachers not only to get direct experience of natural and cultural history but also to enhance learning

through a personal connection that teachers consider essential for ‘developing environmental concern through a sense of connection’ (Lugg & Slattery, 2003, p. 83). The park visited by the students was a powerful metaphor for the journey from environmental degradation to environmental protection (Figure 29). This area, which was once the centre of 'Black City,' was the residence of the Nobel Brothers. To Protect their employees from the severe environmental damage caused by petroleum production, they constructed a residence in this area - ‘Villa Petrolea’ (Figure 30) which was left unattended for many years after the Nobel brothers left Baku after the Soviet Invasion of Baku in 1920. However, only a 20-acre area was pleasant; the remainder of the area was polluted by oil.

Villa Petrolea was reconstructed in 2008 (Figure 31), and the surrounding area - now known as Nizami Park, underwent a remarkable transformation in 2021. During the class visit, we witnessed the ongoing process of its renovation, which symbolized the contrast between the negative impact of human activities and our potential for positive change. The site, which was historically marked by petroleum pollution, has now become a beautiful park.

Figure 30. Villa Petrolea (Baku Nobel Heritage Fund, n.d.) and surrounding area (Åsbrink, 2011).

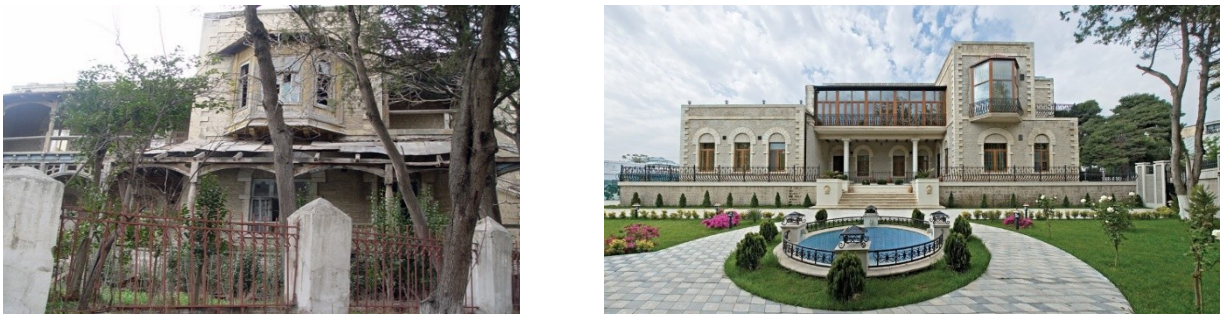

Figure 31. Villa Petrolea before and after renovations (Baku Nobel Heritage Fund, n.d.)

Though during their visit, students were not informed about the history of the park (probably they were during earlier classes that were not observed by me), Asli emphasised her choice of the park, referring to it as the site known as 'environmentally polluted:

> You know this park, it was a severely polluted area, not a nice place. It was later reconstructed. I wanted to have a class in the fresh air and explain to the students the anthropocentric complexes... You know it was in the process of renovation… Human activities to protect the environment were the focus of our discussion. You know the 'White City' project, it's the same area. You see how beautiful it has become. It's true that the air is still not very clean, it needs some time. My aim was to show the students that humans are capable of doing good things to create something good for their relaxation and health (RI3, p. 1)

It seems the choice of park was intentional as Asli wanted her students to be aware of human power in transforming:

> We are planning to visit another park, Ganjlik Park[1], It was not a nice place, was full of waste. But now there are a lot of trees, we won't have a class there, we will have a picnic there. We need to take them to these parks very often so that students can see what human power can achieve, so they are. Not everything is linked to money, they can also make something beautiful (RI3, p. 2)

The parks the students visited had undergone noticeable changes due to human activities. It appeared that Asli wanted to highlight the contrast in human behaviour and their role protect the environment: either being indifferent to nature or creating something meaningful out of seemingly nothing.

In this context, Asli's environmental concerns were primarily from an anthropocentric perspective. In the statement 'My aim was to show the students that humans are capable of doing good things to create something beneficial for their relaxation and health' (RI3, p. 1) she emphasised the positive outcomes of human actions that were intended for the improvement of human relaxation and health. This underscores the importance of environmental protection in enhancing the overall well-being and quality of life for humans.

Planting flowers. During the class visit to the park, she encouraged her students to take on hands-on environmental projects such as planting flowers (Figure 32). To her, these practical experiences not only reinforce the importance of environmental conservation but also empower the students to take responsibility in an engaging and enjoyable way.

Figure 32. Students planting flowers

[1] After restoration and renovation works the Ganjlik Park was opened in 2021.

Role-playing. Asli believed role plays were an effective way of helping students emotionally connect with nature, and feel a sense of responsibility and a deeper

Figure 33. Student during role play

commitment to protecting the environment. Besides verbally communicating with students to invite them to be aware of and be sensitive to nature, she believed role play was another effective way. She viewed role-playing as a means to cultivate empathy and connect with others on a deeper level:

> The most important thing is to develop their empathetic understanding. One of the ways to achieve this is through role-playing, to help students understand and share the feelings of others… the most important is connecting to reality. Every class needs it, I think it is our major problem nowadays (inability to emphasise)… (BI4, p. 18)

Beyond emphasising the importance of role-play in helping students build an emotional bond with nature, Asli also underscored its role in connecting them to the real world, which she seemed disappointed to note was absent. The role play was organised during the visit to the park with students taking on various roles – one student became a storyteller, others portrayed trees or flowers, one played the part of a person with an axe ready to cut down trees, and a few acted as city residents who were discussing the absence of trees and how it affects their health (Figures 33 and 34). The essence of the story that students role-play revolves around the topic of a man wanting to cut down trees. Trees and a flower engage in a dialogue with him, attempting to persuade him not to proceed with cutting the trees.

The dialogue between students was interesting and reflected the essence of protection of the environment from different perspectives:

> St1. (A man with an axe): Ah, these trees. I'd rather cut you down; you seem to be taking up extra space here.

St2. (Tree 1): Why are you cutting us down? Without us, humans would be left without oxygen. We produce nearly 120 kg of oxygen each year. We are a home and a source of food for animals.
St3. (Tree 2): Humans make tools and other useful items from us, such as paper, wooden floors, furniture, and plates. New trees should be planted, but people do not seem to understand this.
St4. (Flower): When will humans behave well towards us? We offer numerous benefits to humans, yet sometimes they treat us poorly. Bees make honey from us, and our petals are used to create various medicines. People even give us as gifts.

The extracts from the role play reveals interesting points about the environmental beliefs of students. The speech from Tree 1 emphasizes the importance of trees for humans by highlighting the production of oxygen, which is crucial for human survival. Tree 2 contributes to an anthropocentric view by mentioning how humans derive various useful items like paper, wooden floors, furniture, and plates from trees. The speech reflects some elements of ecocentrism, particularly in the concerns raised by Tree 1 about the impact of cutting down trees on the ecosystem. The emphasis on being a home and a source of food for animals suggests a broader ecosystem perspective. The mention of planting new trees in Tree 2's speech aligns with ecocentric values, emphasising the importance of maintaining balance within the ecosystem. The speech by Flower embodies a biocentric perspective by expressing a desire for the humane treatment of plants. It highlights the various benefits that plants offer, not only to humans but also to other living beings such as bees that make honey from flowers. The question posed by the Flower implies a moral consideration for the well-being of non-human entities.

The content of the role-play story was collaboratively created by both students and the teacher. Despite a visible inclination towards anthropocentrism, the students' speech exhibits a mix of anthropocentric, ecocentric, and biocentric perspectives: there

Figure 34. Students as city residents

is a clear acknowledgement of the benefits of nature to humans, an awareness of the broader ecosystem and ethical treatment

of all living beings.

Anthropocentric views became more salient at the end of the role play. In this concluding scene, the essence of the story unfolds: a few city residents discuss the illnesses they suffer due to the absence of trees. A man joins them, struggling to breathe, and acknowledges that he should not have cut down the trees many years ago.

The rationale for organising role play in the park was to demonstrate to students the consequences of a positive human impact on the environment which, in turn, means a positive impact on humans themselves. Asli added that the impact of an outdoor class is more profound compared to a traditional classroom within four walls emphasising direct experiences with nature would better equip them with real-life understanding and experiences (RI1, p. 6).

Another interesting aspect during the role play was the personification of trees. Instead of simply using trees in their performance, Asli and her students chose to represent trees in the form of human beings, attributing human qualities to them. Asli's rationale for this was:

> I wanted to remind students that trees are alive and have the right to exist. We wanted to emphasise that trees may not have a language to communicate with us, but they are alive. A person with an axe may think they are the cleverest. He is representing human beings. Trees, though silent, we are aware of their benefits… We see the contrast between trees and human beings (RI1, p.3)

By saying, 'the man could cut only one of the trees but chose to cut both of them' (RI1, p. 4), Asli seemed to imply that in this case, his action would have been justified, considering humans' dependency on natural resources. By acknowledging the value of each natural resource, the teachers appeared to align with the principles of resource utilisation and environmental balance.

The students used natural branches to make their ‘tree’ look even more natural. During a recall interview, Asli noted that “it would be better if students used artificial branches, but considering they had just a few branches, it was not a huge damage and branches will grow up” (RI, p. 7). Though the use of live branches might be considered controversial in terms of the message role play delivered, the teacher seemed to be cautious about it. This also implies teachers’ balanced beliefs about the environment: if humans utilise natural resources no more than what is necessary, nature is capable of regenerating.

7.3.4. Barriers

Though alignment was observed between Asli’s stated and observed beliefs regarding teaching about the environment, the challenges of implementing environmental education seemed to create barriers to realising her beliefs. Asli

acknowledged that outdoor classes are not typically part of her classes, though she understands their importance and makes an effort to have them at least a few times during the academic year.

The safety of students while arranging field trips that came up during previous research (Ko & Lee, 2003) was considered one of the major barriers for arranging field trips. Asli noted that:

> I want to take students for a field trip, but I think how they will behave, if they will listen to me, can I take this responsibility… we have lots of (industrial) plants around us, we can easily arrange fieldtrips, to show an example (of environmental issues), we have practical objects… It is just responsibility of controlling students (BI4, p. 18)

It seems to Asli the safety of students was the major barrier as field trips are usually organized by class tutors and they had the responsibility for the safety of students.

> Another important issue restricting outdoor education was the unfavorable location of the school she was teaching: "I would like to have some outdoor classes in fresh air in school garden… Just because of odeur (odeur from oil tanks) I cant do it". (BI, p.7)

To Asli, limited availability of teaching materials is one of the reasons of ineffective environmental education:

> Special programs need to be designed. We have annual event plans for different events - independence day, 20 January[1], we make the reports of these events, it should cover ecology as well. It should be implemented in a systemic way, both class supervisors and subject teachers should be held accountable for its implementation, all should follow standards (BI4, p. 20)

It seems scarcity of resources hinders teachers' ability to teach about the environment. Ko & Lee, (2003) see 'easy access to the resources' as a way to effectively teach about the environment: "If teachers have more environmental education teaching resources, they are likely to teach more environmental education-related topics" (p. 199).

7.4. Conclusion

Within the framework of this case in addressing the research questions I aimed to explore, I can conclude that:

1. What are secondary school geography teachers' beliefs about the environment and how are they aligned with the teacher's classroom practice? Asli held both anthropocentric and ecocentric beliefs about the environment. She believed the environment and nature should be protected while in many cases placing humans at the centre of her protection beliefs. There were instances where the importance of other living and non-living entities was stressed reflecting a more balanced perspective. Her beliefs were consistently observed during classroom teaching and outdoor exercises, where both her anthropocentric and ecocentric values came into play.

[1] 20 January, also known as Black January is a National Mourning Day in Azerbaijan.

2. What are teacher's beliefs about teaching about the environment and in what ways they were enacted in their classroom practice? Asli reflected the principles of holistic teaching that emphasised knowledge, values, behaviour and practical skills combined with talking, showing, and acting to instil a deep understanding of the environment in her students. Her stated beliefs about the importance of a holistic approach aligned with her classroom practices where she combined the power of verbal instruction and visual demonstration with active participation.

Chapter 8. Zeynab

Chapter eight covers the final case within this study – Zeynab who was a geography teacher in one of the schools in the area 'Black City'. Similar to the earlier cases that have been analysed in earlier chapters (chapters four to seven) Zeynab also seemed to have strong anthropocentric views that were deeply embedded in her beliefs about the environment and teaching about the environment. By constantly stressing the importance of human well-being as a major impetus to protect the environment, she followed the instrumental value pattern that was observed in previous cases. During the three classes I observed, Zeynab did not use any visual aids, which limited my opportunities to incorporate images to illustrate this chapter.

The key conclusions derived from this analysis regarding research questions 1 and 2 are outlined below:

- Unlike Asif and Maryam, who predominantly held anthropocentric beliefs, Zeynab exhibited a blend of both anthropocentric and ecocentric beliefs, similar to Jamila and Asli. Alongside her anthropocentric views, by embracing ecocentric beliefs, she expressed concern for living entities, assigning both intrinsic and instrumental values to them. She had explicit anthropocentric beliefs where she had an instrumental view of the environment and implicit anthropocentric beliefs where she was conscious of the inner value of the environment but still referred to the environment as the resource for humanity;
- Her stated beliefs about the environment aligned with her observed beliefs in most cases: alignment was observed when Zeynab conceptualised the environment as a physical space, encompassing both natural, untouched landscapes and human-altered, built surroundings. She viewed the natural environment as a place where humans acted as observers, appreciating the harmony and balance without interfering. In contrast, she saw the built environment as a place where human activities often have a negative impact, leading to ecological damage. Recognising these dual roles, Zeynab sought to find a coexistence between the two environments and saw humans as part of the environment; Her stated beliefs about the environment did not align with her observed beliefs as in the case below: while alignment was observed between stated and observed beliefs regarding explicit anthropocentrism, implicit anthropocentrism was a theme that came up only classroom observations;
- Considering the contrasting roles of technology in either mitigating or accelerating environmental problems, Zeynab seemed to believe in the power of technology to overcome environmental issues for the well-being of the entire ecosystem, a view likely stemming from her ecocentric beliefs;

Regarding research questions 3 and 4:

- She believed that the delivery of knowledge is important, but emphasised that it must be reflected in real-life application; holistic approach, raising environmental awareness, promoting proenvironemntal behaviour were part of her both esposed and enacted beliefs.
- Her stated beliefs about teaching the environment partially aligned with observed beliefs - her stated belief regarding the use of instructional approaches did not align with her observed beliefs, while duringn the interviews she noted the importcane both direct and indirect learning approaches, she employed in class and indirect learning approaches;

Below, I provide a detailed analysis of one background, two recall interviews (covering three observations), and three observations (in all three observations, the focus was on the layers of the Earth). Each subsection begins with the extracts from background interviews to reflect Zeynab's stated beliefs, followed by an analysis of her observed beliefs, highlighting areas of alignment or misalignment between the two.

8.1. Personal and professional background

Zeynab was raised in the village of one of the most beautiful regions of Azerbaijan - Gabala, known for its attractive nature and historical sites. Growing up in an area characterised by dense forests, rivers, and springs seemed to shape her perception of nature and deepen her love for it.

We lived in the village… our lives were linked to nature. We had an orchard, and we were busy with planting, taking care of trees, plants, and flowers. It was a place with a beautiful view, directly in the middle of the forest. We had a forest road to go to our village... it was like heaven (BI5, p.9-10)

To express her deep connection with nature, she referred to herself as 'torpaq insanı' and 'təbiət insanı', which translate to 'a human of the soil' and 'a human of nature, respectively (BI5, p. 2). This kind of self-expression seemed to refer to the interconnectedness of humans with nature in a poetic way, symbolising a spiritual bond and harmonious relationship with nature. Emphasising the role of her family in instilling a love for nature, she recalled her childhood memories of her grandfather taking her on different day trips to the villages and forests, taking care of flowers, and her mom never allowing them to pick up flowers. Now, though living in the capital, she has managed to find a small place near her house where she grows her own garden, noting:

Whenever I see soil, I want to spend some time with it, plant something. I am linked to nature. I would never have imagined I would have to live in a city. I am a human of the soil, a human of nature (BI5, p. 1-2).

Her perception of nature was further nurtured by her geography teacher, who regularly organized school trips to neighbouring regions that enabled her to directly experience the natural environment:

We really liked our geography teacher, all the students wanted to have only geography classes. She managed to make us love the subject... She treated all the students with

respect and kindness... Despite living in a village surrounded by nature, rivers, and mountains, she would often take us on school trips. She would show us various plants, rocks, explain how rocks formed, and point out the source of rivers… The way she described everything was so clear and enjoyable (BI5, p. 2-3)

Inspired by her geography teacher, Zeynab became a geography teacher herself, even though, during her childhood years, she had initially planned to become an artist and had even won first place in an art competition. The expressions ‘a man of soil’ and ‘a man of nature’ reflected her artistic spirit merged with her love for nature.

With four years of experience as a teacher in environmentally polluted areas, she struggled with the challenges of living away from nature and planned to relocate back to her home region as soon as the opportunity arose.

8.2. Beliefs about the environment and their enactment

The section below conveys the main themes that were observed during data analysis addressing both the beliefs Zeynab hold about the environment and how these beliefs are translated into action. The section also emphasizes whether there is alignment between stated and observed beliefs. Alignment was observed between observed and stated beliefs regarding environmental beliefs in all cases except implicit anthropocentrism which was not observed during the interviews.

8.2.1. Physical environment

Zeynab's response to the question 'What is the environment?' was simple and straightforward yet seemed to carry a complex underlying meaning. She asserted that the environment is 'everything,' which extended beyond the physical surroundings to encompass ecosystems, climate, resources, the delicate balance, and the coexistence of living and non-living beings. However, it became apparent that Zeynab's dominant focus on the environment leaned towards its physical dimensions overshadowing the social and cultural aspects within her conception:

The environment means everything… Everything that humans need to live - water, air... It needs to be protected to ensure the well-being of humanity. If humans wish to protect their health, continue living normal lives, they must protect their surroundings. We forget we are sustained by it… (BI5, p. 3-4)

The paragraph reflects an instrumental value of nature, placing humans at the centre of concern and highlighting the environment's significance in relation to human well-being. The opening statement, ‘everything that humans need to live,’ defines the environment solely in terms of its utility to humans. At the same time, within her anthropocentric perspective, Zeynab recognises that the environment is a complex and interconnected system by considering the dependence of humans on the environment and resources such as water and air.

Natural vs built environment. Nature seemed to play a central role in shaping Zeynab's perception of the environment. She sometimes used the terms ‘nature’ and ‘environment’ interchangeably, reflecting an integration of the natural world into her

understanding of the surroundings. By blurring the distinction between nature and the broader environment, Zeynab viewed the natural world not as a separate entity but as an intrinsic and indispensable part of the larger environment. This aligns with the research findings from various studies that indicate teachers do not always draw a clear distinction between nature and the environment. Nearly half of preschool teacher respondents' conception of the environment in Greece was identical to that of nature (Flogaitis, 2003). In the research conducted to reveal the environmental beliefs of adolescents by Bogner & Wiseman (2006) and teachers and pre-service teachers in Sweden and France by Nyberg et al. (2020), the two concepts were used interchangeably and the difference between nature and environment was not clear-cut.

In certain instances, the distinction between nature and environment was expressed through the terms 'natural environment' and 'built environment' (Schultz et al., 2004). Zeynab articulated a dualistic viewpoint, asserting that the environment represents both an untouched, pristine nature and an altered 'place to exist,' significantly shaped by human activities that align with the 'natural environment' and 'built environment'. Her conceptualization of the environment, viewing it through the lenses of nature and as a place deeply impacted by human actions, resonates with two categories within Sauvé's (1996) typology of environmental conceptions. Sauvé (1996) asserts that the environment as nature "is the original, "pure" environment, from which humans have dissociated themselves and to which they must learn to relate in order to enrich their quality of being" (p. 10) whereas the environment as a place to live "is the day-to-day environment, at school, at home, in the neighbourhood, at work and at play" (p. 11).

Seeing the environment as untouched nature, reflects Zeynab as an observer of nature, also emphasizing a harmonious coexistence with the untouched environment. On the other hand, the conception of the environment as an altered place to live manifests her beliefs as humanity in a dynamic relationship with their surroundings, also acknowledging the transformative influence of human activities. In this context, individuals are perceived as active participants shaping and being shaped by the environment. To Zeynab the challenge lies in finding a balanced coexistence that respects both the untouched beauty of nature and the realities of our altered living spaces which results in an inherent conflict - a 'fight' between two environments - 'nature' and 'place to exist':

> The environment is a constant struggle between humans and nature. On one side, there are green landscapes, untouched beauty, everything seems to be good in the absence of human presence... All living beings coexist – animals, plants, humans, the natural elements like trees, mountains, water. No, I wouldn't even include humans on this side... On the other side, we see the human domain, factories, pollution, smoke, part of a damaged Earth (BI, p. 8-9)

By excluding humans from one side, Zeynab suggests that human presence inherently disrupts the natural balance and harmony and positions humans as mere observers who can appreciate

the beauty of nature but should avoid intervening or altering it. On the other side, the 'damaged Earth' highlights the destructive role humans play in transforming natural landscapes into built environments.

Zeynab's conceptualisation of the environment as a physical surrounding covering natural and built environments and humans' role within these environments and efforts to find balance was observed during class teaching where her stated beliefs aligned with enacted beliefs.

Physical environment was the major focus of Zeynab while teaching students about the environment. She constantly spoke and discussed with students the atmosphere, lithosphere, biosphere and hydrosphere, which are components of the physical environment and their role in the existence of humans and all living beings. The topics about physical components of the Earth were observed during all three observations (CO1, CO2, CO3) I participated in:

> T. All the water resources in the world are called hydrosphere. Oceans are the biggest part of it. Can we drink ocean water? (CO1, p. 3)

> T. There is oxygen in the atmosphere, we said oxygen is the most important thing for living beings to survive. (CO2, p. 7)

> T. So lithosphere is the stone, soil layer of the Earth, what is the role of the lithosphere in the lives of human beings, living beings, plants, microorganisms? (CO3, p. 6)

Exploring ways of balanced coexistence was one of the recurring topics during classroom observations as well. Zeynab frequently posed questions to explore students' ideas about this coexistence and invited them to critically think and share their views:

> The plants, factories, mining natural resources - human activities negatively impact nature, pollute the hydrosphere. However, we need these factories, we need natural resources, we need crude oil. So, how should we proceed? How can we get what we need while also not polluting nature, water? (CO2, p. 4)

While speaking with her students about the importance of maintaining ecological balance she said:

> Even though we use natural resources, we need to make sure we restore them. (CO2, p. 10)

Viewing the environment as a struggle between the natural and built environment, Zeynab seemed to believe in the importance of living in harmony with nature and sought to instil this value in her students.

In the next section below, I explore and provide details on how Zeynab perceives the relationship between humans and nature where her intentions to maintain a balanced approach are revealed as well.

8.2.2. Explicit and implicit anthropocentrism

Zaynab's beliefs about the environment comprised a complex blend of both explicit and implicit anthropocentric perspectives. In identifying explicit anthropocentrism, I highlight instances where Zeynab explicitly references protecting the environment from a human-centric viewpoint. Implicit anthropocentrism, on the other hand, refers to cases

where Zeynab demonstrates awareness of the shortcomings of her anthropocentric beliefs and attempts to present her environmental views from an ecocentric perspective. While she frequently overtly prioritized human importance in decision-making related to the environment, there were instances where she demonstrated an awareness of the significance of other living beings. This awareness was evident in her self-correction, particularly during class observations, as she would often emphasize the importance of humanity while simultaneously attempting to amend her anthropocentric beliefs by repeatedly stating, 'not only human beings, but all living beings While instances of implicit anthropocentrism were not very frequent, I have decided to include them in my findings as it shows Zeynab's openness to modifying her beliefs about the environment, evolving into a state of 'consciously competent[1]' where she seemed to acknowledge that the environment exists not only from an anthropocentric perspective but also from an ecocentric standpoint.

Explicit anthropocentrism. During the interviews and observations Zeynab expressed her ideas about the environment and nature with a focus on humanity. During the interview, she drew attention to the importance of understanding the essence of protecting the environment and this 'essence' explicitly aligned with her anthropocentric beliefs:

> The first thing, not only students but all people should understand 'the essence'. If they understand the essence there is no need to guide them. If we ask students what will happen if they don't eat? They won't live. The same applies to nature… Imagine there are no plants, factories around, but instead, there is a beautiful forest, animals… they can compare it with plants and factories that pollute the atmosphere, you can't breath, lots of noise, you can't sleep, you get stressed out, no rest, you can't relax, your brain gets tired… You may want to think instead of this noise there are sounds of birds, fresh air… Instead of smoke the sound of river… (BI5, p. 26-27)

Emphasizing humans by saying "you can't breathe, lots of noise, can't sleep, you get stressed out, no rest, you can't relax, your brain gets tired" Zeynab seems to be focused on human well-being. Even thinking of nature as beautiful seemed to express anthropocentrism where the notion of 'beauty' was intensified and expanded further by the 'sound of birds', 'sound of rivers' – to please human ears. Zeynab's perception of 'beautiful nature' seemed to be driven less by its intrinsic beauty and more by the emotional impact that natural beauty has on them: not 'for the sake of its own beauty' but more of its ability 'to evoke pleasure in people' (Keith et al., 2022, p. 6) as she focused on how nature affects her positively and finds tranquillity. Her observation extended beyond the external beauty of the natural world, focusing on the impact it had on her inner self.

[1] Conceptual model of skill development by Noel Burch (1974). Four stages of skills development: stage one - unconscious incompetence (I don't know what I don't know); stage two - conscious incompetence (I know what I don't know); stage three – conscious competence (I am developing new skills); stage four – unconscious competence (the skill is performed automatically, without the need for specific focus or attention).

Explicit anthropocentrism was observed when Zeynab clearly stated that natural resources are meant for the use of human beings. In her perspective, humans were 'accused' of not making good use of the natural resources granted to them:

> I do not understand why people prefer to live in these places (Black City) rather than in regions where there is soil for agriculture… You can get everything you need from the soil. There are many people who live like a 'bəy[1]' in the villages… How did they achieve this? Through the soil. Even if there is nothing, nature provides everything (BI5, p. 5-6)

By comparing individuals leading a simple life in the city with the higher living standards of a 'bəy' in the villages, Zeynab underscores the significance of soil in shaping diverse lifestyles. In this perspective, the paragraph emphasizes a human-centric viewpoint regarding the importance of soil in meeting human needs and influencing lifestyle choices.

Zeynab's stated anthropocentric beliefs seemed to align with her observed beliefs. During class observations, while discussing the impact of human activities on the environment and emphasizing the need for the protection of natural resources and Earth's layers, she underscored their significance for humanity. The questions she posed, such as 'Why do we need the Atmosphere?' (CO1, p.1) and 'What is the role of the Hydrosphere in human life?' (CO1, p.2), were anthropocentrically oriented. Zeynab preferred to frame their existence in relation to humans rather than in a more general way, such as 'What is the essence of the atmosphere?' or 'Why does it exist?'—which would likely convey an ecocentric approach. These questions provide a human-centred perspective that might be helpful to understand their immediate impact on humans while also limiting the understanding of the intrinsic value of environmental protection.

Implicit anthropocentrism. With much focus on explicit anthropocentrism, the traits of implicit anthropocentrism were conveyed during Zeynab's teaching practices while it was not evident during the interview :

During class observations, she constantly stressed the rights of all living beings, not just humans by usually self-correction:

> What is the role of water in human life? Not limited to humans, but for all living beings, what are the general benefits? (CO2, p.2)

Zeynab framed her question around humans. Initially, her thoughts centred on the existence of nature for humans. But as she was cautious about other living beings, she amended her statement by adding 'all living beings.' A similar pattern is observed in the following sentence:

> Everything starts with soil, our existence, our houses, our food. For other living beings as well (CO2, p. 12)

Starting her speech with 'our' and later adding 'as well' for other living beings Zeynab seemed to see human existence as the most important but was aware of the importance of other living beings. The dialogue below opens a different perspective:

[1] In Azerbaijan, there is a saying 'to live like a bəy,' which refers to someone whose living conditions are higher than those of ordinary people. 'Bəy' is an ancient Turkish word that historically refers to a person of higher social status. This term is encountered in various epic literature pieces of Turkish people, such as the Book of Dede Korkut dastan. Although the word has lost some of its historical meanings, today, in Azerbaijani weddings, the groom is referred to as a 'bəy'.

T. Why do we need the atmosphere?
S1. To get air.
S2. To breathe.
T. It means, for living beings to exist, the atmosphere is important (CO1, p. 1)

Considering the atmosphere may not be a requirement for the existence of all non-living entities and non-living entities, such as rocks, minerals, and other objects, might not depend on the atmosphere for their existence, Zeynab's emphasis on "for the living beings to exist, the atmosphere is important" may have led to the exclusion of non-living entities in her speech. This may not be the case for all other anthopocentrically oriented questions, for instance, "How can the melting of ice lands affect human life" (CO1, p. 5) where melting ice lands can have an impact on inanimate entities.

While subconsciously referring to her anthropocentric beliefs, Zeynab remained conscious of the significance of other living beings, a perspective intertwined with her biocentric beliefs, as discussed in the next section.

8.2.3. Ecocentric beliefs

In addition to her anthropocentric beliefs, Zeynab appeared to hold biocentric and ecocentric principles. She believed that every organism, from the 'smallest microbe to the grandest tree', plays a vital role in the delicate balance of the ecosystem that seemed to be intertwined with her anthropocentric beliefs. Hence, according to Ajaps & McLellan (2015) "in reality, people do not fall into very distinct categories with regard to the possession of egoistic, altruistic and ecocentric values" (p. 4) and research findings suggest that individuals may simultaneously hold diverse environmental beliefs (Bogner & Wiseman, 2006; Snelgar, 2006).

Zeynab believed that in the near future natural resources will have an alternative source, but still thought natural resources should be protected. Her rationale was interesting as it reflected intrinsic value:

> We need to protect (natural resources), not only to preserve them for future use, there are already alternative sources, but also to safeguard nature, not to harm the lithosphere (BI5, p. 15)

Zeynab maintained a stance that went beyond mere practical considerations, reflecting the inherent worth of the environment, a perspective that was different from the commonly held anthropocentric views. Her non-anthropocentric beliefs - ecocentric concerns once more were revealed in the paragraph below:

> Everywhere we speak about only humans, humans… Like humans, plants are also alive. The more plants there are, the more animals, the greater the number of other living beings (BI5, p. 12)

She viewed the protection of the environment as more than a duty but as a fundamental aspect of existence. Her ecocentric beliefs extended to both human and non-human living entities, considering them integral parts of the Earth and the importance of humans did not seem to

excel the significance of non-living beings but they were regarded as two different groups. Different aspects of ecocentrism were revealed during her dialogue with students below:

> T. What are the functions of trees?
> S1. Trees release oxygen, absorb carbon
> S2. To make books
> S3. To get wood
> S4. We make medicine from plants
> T. Okay, you noted their use for humans, but trees are important for other living entities. So many little birds live in those trees (CO2, p. 9-10)

Expanding on her reflections, she went on to say:

> Trees are homes for other animals. Nature doesn't belong just to humans, it is for other living beings as well... Alongside humans other animals also have rights... we need to think of birds, other animals... we just see trees that are cut down, but we don't see birds that are used to live specifically on those trees, that can't live in other environments, that can't live in a desert. With these trees, those birds perish as well. Even though we use natural resources, we need to make sure we restore them. (CO2, p. 10)

Discussing the role of trees in the classroom "may provide a level of visibility and awareness for students that cannot be matched easily by other sources" (Keith et al., 2022, p. 5). By highlighting that nature is not exclusively for humans in the example of trees and advocating for the rights of trees and animals, Zeynab went beyond the typical mindset of individuals who often take nature and its resources for granted and overlook the idea that animals also possess rights. She drew the students' attention to the less visible consequences of human negative activities. Noting the rights of animals suggests an ethical standpoint in terms of the human relationship with nature. Moreover, she stressed the importance of maintaining ecological balance by noting restoration as an environmentally responsible behaviour that humans should follow.

Though the importance of trees for oxygen production is noted very often, the role of plankton, which produces most of the world's oxygen goes unrecognise (Keith et al., 2022). Zeynab was the only teacher in this study who noted, 'When we say 'oxygen,' we only think about trees. But 92 per cent of oxygen comes from plankton" (CO2, p. 7).

Ecocentric views on environmental relationships. Zeynab's ecocentric beliefs were revealed while she was discussing the human-environment relationship. By saying "All living beings coexist – animals, plants, humans, the natural elements like trees, mountains, water" (BI, p. 8) Zeynab seemed to see humans as part of the environment. The extent individuals believe they are part of nature is connected to their beliefs about the environment (Schultz et al., 2004; Snelgar, 2006). According to the research results by Schultz et al. (2004) positive correlations were observed between individuals' connections with nature and their biospheric environmental concerns while these connections were found to be negatively correlated with egoistic environmental concerns. Zeynab perceived humans as part of the environment although according to the research results in different contexts, humans are usually excluded from the notion

of ‘environment’. For instance, the research findings by Puk & Stibbards (2010) conducted in Canada revealed that 73% of teachers did not include humans in their definition of “the environment”. Mylius (2018) asserts that separation from nature rests on the idea of humans being ‘distinctive’, however humans are not the only entity to be distinctive:

> Squid, for example, shoot ink when threatened, which certainly makes them distinctive. But no text I have ever read makes the further claim that squid, on this basis, are ‘separate from nature.’ Separateness from nature, it seems, is a fairly exclusive club, of which Homo sapiens alone is a member. (Mylius, 2018, p. 182)

While defining environmental concerns Snelgar (2006) proposes the notion of a ‘degree of otherness’ where ‘otherness’ does not imply the opposite of ‘connections with nature’ (p. 97). The degree of otherness is reflected in terms of how individuals perceive themselves not as separate or distinctive but as other groups. The order of otherness, from least to most, is proposed as follows: self; other people; other animals (nonhuman animals); and other living things (nonanimal). The degree of otherness from self, however, is not equated with the degree of concern, as the author notes that most samples express more altruistic concern than egoistic concern.

Zeynab seemed to perceive humans as part of the environment - as an ‘other’ group within it, alongside animals, plants, the natural elements like trees, mountains, water” (BI5, p. 8). By stating ‘No, I wouldn't even include humans on this side’ (BI5, p.8) initially seems to be separating humans from the environment. However, the overall meaning of her speech suggests that this separation stems from the notion that humans, in her view, may not deserve inclusion in the natural environment. She excludes them not because they are separate and superior but because they have a ‘damaging’ character.

The use of words like 'struggle' and 'damage' implied that human activities are harmful to the environment. This might be the reason Zeynab expressed the exclusion of humans from environment and tried to dissociate them from nature due to the damage they bring to the natural world and prefers not to consider them as an integral part of nature. The description of the 'other side' with 'factories, pollution, smoke' conveys a sense of environmental degradation caused by humans, which is a widely recognise issue negatively affecting the environment currently.

Zaynab's perception of human beings as 'other' appeared again when she considered humans as possessing a conscious mind. However, this did not imply superiority over other groups but rather emphasized their distinctiveness as a different group:

> God created humans distinctive, gave us a conscious mind to choose our own path and make decisions independently. But even though we have this conscious mind, we don't use it. If God gave us a conscious mind, it doesn't mean we should destroy trees, nature, soil, sky, oxygen, or anything else. We should use our conscious mind, act

according to it, to ensure that neither the skewer burns nor the kebab is lost[1] (BI5, p. 13-14)

For Zeynab humans having a conscious mind does not mean humans are privileged or superior to other living/non-living beings. To her, humans form a distinct group due to their ability to think, and when she said 'to ensure that neither the skewer burns nor the kebab is lost,' she emphasized the importance of maintaining a balanced approach and living in harmony with other groups. Referring to modern robots she said ‘Even alternatives to humans have been created’ (BI5, p. 16) which challenges the notion of human superiority. The acknowledgement of these alternatives seems to suggest that the unique power–conscious mind and distinctiveness traditionally associated with humans may be diminishing.

Observations of Zeynab’s classroom practices revealed an ecocentric tendency to categorise humans as an other group among living entities. In some instances, she used the term 'superior' before humans. It seemed that the term 'superior' was used to convey the meaning of 'the most evolved’.

When we say living entity, we don’t think only about humans. (We think of) all the living beings, from microorganisms to the most superior entity – human beings… We need to consider all living beings. Not just for humans, not just humans use it as drinkable water, or for humans’ rest… human, human, human. Not just humans in every sentence, but all living beings (CO3, p. 3)

The paragraph above may seem contradictory as the statement "humans are the most evolved" can be interpreted in different ways, depending on the context and the underlying assumptions. Considering the context here asks students to divert their attention focusing only on humans, I refrain from stating it implies anthropocentric beliefs but rather ecocentric beliefs. In the paragraph above Zeynab stressed the importance of considering all living entities, urging students to refrain from centering discussions solely around humans that reflected an understanding of the interconnectedness of all life – of all groups along the continuum from microorganisms to humans. Another example can be:

Who established 'The Red List'? Humans did. If humans did not have an impact on causing the extinction of plants and animals, there might not be a need for 'The Red List,' and all living entities could continue to exist. What are we supposed to do? We need to protect nature on all levels – whether it be plants, living beings, animals, soil, or natural resources. It doesn't matter, all of them (CO2, p. 4)

The paragraph emphasises the need for a holistic and ecocentric approach to protecting various elements – ‘groups’ of nature. It is interesting to note the use of the phrase ‘It doesn't matter’ which refers to the idea that all groups should be protected without prioritizing one over the other. The quote by Zeynab “If there is a conflict between humanity and nature, and if humans win, it means they have lost this fight” (RI1, p. 4) was interesting in terms of revealing the delicate balance required for the coexistence with the natural world. Noting the complex relationship between humanity and nature, Zeynab underscores the paradoxical loss of humanity in the broader context:

[1] Neither the skewer burns nor the kebab is lost is a saying in Azerbaijan to express the importance of keeping balanced approach.

> Humans fight with nature and think they are winners. They destroyed the Amazon forests, diminished their oxygen, ozone holes emerged, destroyed the Earth. What did they get? Even if humans think they can fight and overcome nature, they will be losers in the end. Humans can never have a victory over nature. (RI1, p. 5-6)

Emphasizing the adverse consequences of human actions on the environment, Zeynab cautions against the idea of being in conflict with nature. Instead, she calls for harmony and stresses that achieving victory over nature is not an attainable goal.

8.2.4. Technological advancement

One of the recurrent topics that was encountered during interviews and observations with Zeynab was the role of new technologies in mitigating environmental problems. Considering Zeynab had a mix of anthropocentric and ecocentric beliefs leaning more towards anthropocentrism, it was interesting to explore how her perspectives about the development of technologies contribute to her beliefs about the environment that either prioritize human well-being or consider the development of environmentally friendly technologies to minimize harm to biodiversity and ecosystems.

Zeynab perceived the advancement of technology more as a way to contribute to environmental protection and prevent humans from contributing to its problems rather than thinking about it for the well-being of humanity which contributes to her ecocentric beliefs. This was revealed through the distinctive perspective she had. Zeynab did not view the depletion of natural resources as a significant issue. She believed that, with the aid of new technologies, alternative resources would be developed in time.

> It (natural resources) will end when it should; the lithosphere will breathe. We fly into the cosmos, we create artificial food. If everything gets replaced, it will be replaced as well. You see, oil, gas, petrol... we are now shifting to electric cars. Cars using steam, electric... Conscious robots have been created—they have facial gestures, they blink their eyes and answer questions. Even alternatives to humans have been created… (BI5, p. 15-16)

Her perspectives on the depletion of natural resources did not appear to reflect 'indifference.' By expressing that 'the lithosphere will breathe,' she seemed to perceive the emergence of alternative energy sources as a means to guide humans away from harming the environment. This aligns with the views of Australian pre-service teachers who believed in the power of science and technology to overcome environmental degradation (N. S. Evans et al., 2012). In a typology of conceptions of sustainable development by Sauvé (1996) technological innovation is seen as one of the major impetus to drive sustainable development. It might be the reason that research findings conducted in various countries show that, teachers identify technological development as one of the key conceptual areas of sustainable development (Kilinc & Aydin, 2013). It is considered that through redesigning technology we can close the existing gap between ‘human design and sustainable systems in nature’ (Capra, 2013, p. 207).

While it might be argued that technological innovation has the potential to mitigate environmental issues (Sauvé, 1996), it is important to acknowledge the discourse surrounding the dual role of technological power, which not only offers solutions but also contributes to the exploitation of natural resources (Bonnett, 2018; Duoblienė et al., 2023). Moreover, Robottom argues that technocratic worldviews create a false assumption interpreting environmental problems as 'technical problems susceptible to technical problems of the kind that science is competent in supplying' (Robottom, 1991, p. 20). As in the paragraph below, Zeynab seemed not to have 'false assumptions' and she was aware of the extent the technology could be employed and contribute which also shows alignment between her stated and observed beliefs:

> No matter how much technology advances, humans unequivocally depend on nature. Even though artificial food substitutes were designed, even though robots to substitute for humans are created. But it doesn't matter, we still depend on nature, Let's not make nature depend on us (CO2, p. 14)

She believed technological advancements were important to deal with the increasing demands of modern societies and her class discussion with her students also focused on developing alternative energy sources, recycling, and the conservation of energy, all of which are considered environmentally responsible behaviours (Ajaps & McLellan, 2015). However, at the same time, she believed technological advancement cannot substitute everything for humans and humans will always depend on nature.

8.3. Beliefs about teaching about the environment and their enactment

Zeynab's espoused and enacted beliefs about teaching about the environment were mainly consistent. During the interviews she prioritised building knowledge, fostering pro-environmental behaviour, and instilling values through interactive methods, holistic approaches, and awareness-raising activities.

Sharing her belief regarding what needs to be taught to students while teaching about the environment, Zeynab stated:

> I would start with the theory part - we'd talk about how the environment has become polluted, go over all four layers, and explain the damage people have caused. I'd cover all that theoretically in class. If there are any videos or photos available, we'd use those too. And along with that, I'd try to show things in real life. The area we live in is actually surrounded by factories, we could look at that. We could show them the polluted areas of the Caspian. There are so many issues with the Caspian right now, those could definitely be shown (BI, p. 17)

Asli's belief reflects an emphasis on building environmental knowledge while also laying the groundwork for pro-environmental awareness. By starting with theoretical instruction such as explaining pollution, environmental layers, and human impact the teacher ensures students develop a cognitive understanding of environmental issues. This is further supported by the use of visual materials like videos and photos. However, the approach extends beyond theory

through suggestions of experiential learning, such as observing nearby factories and organising field trips to polluted areas like the Caspian Sea. These real-world experiences help students connect abstract concepts to their immediate environment, making the issues personally relevant.

She further added:

> What I mean is, it shouldn't just be like 'okay, you looked, you saw, and that's it.' We need to make sure the kids are actually doing something, getting involved in some kind of activity. So that even a little bit of it sticks in their minds. Like, the next time someone throws trash there, they remember 'hey, you're not supposed to do that.' We all say 'don't do it,' but it's different when they experience it for real, when they see it live (BI, p. 20)

The paragraph reflects the importance of active engagement in fostering pro-environmental behaviour change. The teacher emphasizes that simply observing or being told about environmental issues is not enough to promote environmental behaviour. Instead, she believes student participation in meaningful activities and relating to real-world experiences during learning experiences is important, highlighting that behaviour change is more likely to happen when students are personally involved.

Zeynab's classroom practices reflected both knowledge delivery and the promotion of environmental behaviour. During the three observations I conducted, she consistently taught students various geographical and environmental concepts, making efforts to relate these topics to their daily lives and encourage behaviour change to help mitigate negative environmental impacts:

> Have you heard of the greenhouse effect? Because of human activities, the air gets polluted, and holes start to form in the ozone layer. And when those holes appear... you see, harmful rays from the sun can get through. The main reason these holes form is because of the damage people cause to nature. Things like factory and car emissions, smoke from wildfires, large-scale burning, chemical substances, even fireworks we set off during celebrations - all of these release toxic gases and smoke. And it's these things that lead to the ozone layer getting damaged. Once the ozone layer is weakened or has holes, those rays come through and cause the greenhouse effect, which leads to global warming (CO 3, p. 5)

After teaching students about the greenhouse effect and global warming and how human activities directly impact global warming, Zeynab went on to discuss with students what can be done to prevent the destructive effects of humanity:

> So, what should we do? Humans depend on nature — no matter how developed a country becomes, it still relies on nature. So what can we do to use nature without destroying it? How should we behave? (CO3, p. 8)

The discussion continued for the remainder of the class, covering various topics aimed at promoting pro-environmental behaviour which included strategies for avoiding plastic pollution, the importance of recycling, and a comparison between plastic bags and biodegradable bags (CO3, pp. 8-10).

Although her classes didn't demonstrate interactive teaching, they did reflect alignment with holistic teaching and raising environmental consciousness. Moreover,

misalignment was observed regarding teaching approaches since, during the interviews, Zeynab emphasised the importance of both direct and indirect learning approaches during three observations, only indirect learning approaches were employed.

The delivery of knowledge and the promotion of pro-environmental behaviour emerged as recurring themes in Zeynab's approach to environmental education, as explored in the following three sections. This is because what to teach - knowledge or environmental behaviour - is closely intertwined with how to teach it, whether through direct or indirect learning approaches.

8.3.1. Interactive instructional approaches

For Zeynab, effective teaching about the environment requires a combination of theoretical and practical materials. Incorporating multimedia, real-world examples, and hands-on experiences with knowledge from textbooks is considered important by Zeynab. She believes rather than trying to transfer the information from teachers to students – we should guide them through practical examples.

> I teach them about the consequences of environmental pollution, the harm humans have caused. We do textbook readings, and if there are videos or photos, I show them. The environment we live in is right in the middle of industrial plants. We may go on field trips to those areas. The polluted areas of the Caspian Sea…The Caspian Sea has lots of problems now… We need to vividly show them (BI5, p.17-18)

The teacher suggests a comprehensive approach to engage students by means of the use of various teaching methods. Proposing exploring the local environment through field trips to polluted areas, like those plants and around the Caspian Sea, she underscores the importance of firsthand experiences to better understand environmental issues:

> We cover the theoretical part, explain it, and they understand, so they have the information. After that, it's necessary to organize a real-life excursion to explain everything to them in more detail (BI5, p.17-18)

Fawcett et al. (2002) assert that 'living bioregionally' - facilitating students' knowledge about their region is important to raise awareness of environmental issues and ensure that the connection is made between local issues and the 'big picture' (p. 230). She further highlighted the importance of students not being passive observers and stressed the value of active engagement by saying:

> 'it (field trips) should not be that they (students) looked and saw, we need to think how students might have an active involvement' (BI5, p. 20)

Relating local environmental problems with global issues was not observed during classes as it was noted during interviews by Zeynab. While she discussed with students the hydrosphere, human adverse impact on it and preventive measures, the local problems, such as pollution of the Caspian Sea with crude oil were not addressed which is a significant problem in Azerbaijan. As Zeynab herself was aware of and noted in the interview the location of school and student living places amid industrial plants

while discussing the atmosphere again local environmental problems were not indicated and related to a 'big picture'.

Zeynab pointed out that environmental topics are typically covered towards the end of the academic year – 'it should be the first topic, but as you see it is one of the latest topics' (BI5, p. 18) - suggesting that the final topics may not be addressed as comprehensively as earlier ones due to exam pressure and teacher workload. This could be the reason why Zeynab was unable to organise an outdoor class.

During the interview, Zeynab also noted teaching methods such as debates and role play, which, to her, were effective ways of organizing practical classes:

> … the debates are usually interesting. We covered how Europeans discovered the New World, how they went and created colonies… Some of the students played the role of Native Americans, even dressed up in traditional costumes with accessories and face paint, others played European explorers... (BI, p. 21)

However, during the three classes observed these strategies were not employed (but might possibly used in other classes that I did not have a chance to observe).

8.3.2. Holistic environmental approach

Zeynab highlighted a potential gap in the current curriculum which she thought was overloaded but missed important topics. She noted in certain paragraphs students learn about, for instance, the atmosphere, but it does not cover humans' negative impact and the ways of protecting it. She suggested a need for prioritizing environmental education and stressed the significance of integrated and holistic approaches:

> We don't need to wait until we come to that specific topic. When we learn about the atmosphere, we need to have a paragraph about how to protect it, what pollutes it. We should cover both pollution and protection (BI5, p. 19)

To Zeynab, rather than learning 'isolated' topics students need to see the connections between different subjects and understand the broader implications of their learning.

This was one of the recurring patterns observed in the classroom, where she consistently approached topics in a holistic way. She would first inform students about the subject and then delve further by exploring its causes and consequences. When discussing the layers of the Earth with year 7 students, she began by exploring with students the components of the atmosphere, hydrosphere, lithosphere, and biosphere, and their roles within the ecosystem:

> T. Let's start with the hydrosphere. The collection of all water objects on Earth is called the hydrosphere. What do you think are the components of the hydrosphere?
> S1. Rivers, seas
> S2. Lakes
> S3. Oceans
> …
>
> T. The hydrosphere is the water layer of the Earth. Approximately 60-70 per cent of humans, animals, plants, and other living entities consist of water (CO3, p. 1-2).

After discussing with students different aspects of the hydrosphere she went on to discuss human negative effects on the hydrosphere, pollution of water and consequences of pollution:

> T. We can generalise by stating that water is one of the most crucial components for life to exist. Then how do people pollute the hydrosphere?
> S1. Crude oil, plants
> S2. Chemical substances
> S3. Polluted water
> S4. Household waste
> T. Oil wells, polluted water, and poisonous substances from plants and factories – all contribute to the pollution of the hydrosphere. What are the consequences of this pollution? We say it as polluted, but what follows? (CO3, p. 2)

By focusing on the causes and consequences of environmental issues and saying 'We should not teach just the rules, we need to show the causes, what the consequences will be' (BI5, p. 23), she likely thought of the importance of encouraging a more contextual and real-world understanding of the rules which helped students connect theoretical knowledge with practical implications. She kept students engaged and did not just lecture about certain layers of the Earth but involved them in discussions. By posing questions like 'What should we do to prevent pollution of the hydrosphere?" (CO3, p. 2) she also informed her students about the ways of preventing water pollution.

8.3.3. Raising environmental awareness

Zeynab consistently educated her students about the consequences of their actions and called for the protection of nature and natural resources for their own well-being. She framed her questions to emphasize human concerns, but it did not imply a lack of concern for the environment:

> We toss plastics, thinking they'll vanish, but after a thousand years, they persist. If every person tosses plastics, the soil will be devastated. Soil requires rejuvenation. It's important to tell this to students. Plastics don't decompose. Plants… if we toss plants, we know it will help the soil to regenerate. But plastics, they linger. There are so many people. Imagine the impact if everyone discards just one plastic item, the lithosphere gets destroyed. What does that mean? That means the destruction of all humanity (BI5, p. 23).

Zeynab highlighted the importance of drawing students' attention to the long-lasting effects of plastic disposal. Stressing the difference between organic and synthetic materials, she related it to soil rejuvenation and the negative effects of human activities. During class teaching, she brought up a specific example of the pollution of rivers with plastics which could help students relate environmental problems with real-life examples. She raised awareness among her students, inviting them to think about the consequences of tossing their waste around and consider recycling:

> T: What can we do to protect the hydrosphere?
> S1: We should not toss waste into the water. We should use recyclable means

T: Yes, recycling – have you heard about recycling? There used to be just one bin for everything, now there are several ones according to the waste type. Why are they separated?
S2: For recycling.
T: What is the difference between fruit seeds and a container of water?
S3: Plastic will remain for five years.
T: Even iron undergoes erosion. But plastics don't, as they are not exposed to water. I have told you about the most polluted river, in Indonesia, the Citarum. The water is nearly invisible, there are only plastic bottles instead of water. (CO2, p. 5)

Similar to teachers, who usually associate environmental protection with reducing the amount of waste (e.g. Türkoğlu, 2019), recycling was an integral part of Zeynab's speech during interviews and class observations. In the background interview, transitioning to zero-waste technology was seen as a key strategy for environmental protection by Zeynab (BI5, p. 8). During all three classes observed, recycling was a recurring topic and by stating "Many European countries have already made this shift" (CO2, p. 14) she constantly emphasised the urgency of shifting to recycling.

8.4. Conclusion

Within the scope of this case, I may conclude that:

1. What are secondary school geography teachers' beliefs about the environment and how do they align with teachers' classroom practice? Zeynab's beliefs about the environment were predominantly centred around humans. Guided by her anthropocentric beliefs, Zeynab perceived the environment in relation to humans as nature untouched by humans and nature altered by human activities. Her beliefs regarding the human-nature relationship differed from earlier cases, where she viewed humans as part of nature - not separate from other living entities due to their conscious mind. Additionally, she cared and was concerned about other living and non-living beings which reflected her ecocentric perspectives in conjunction with her anthropocentric beliefs. Zeynab's beliefs about the environment aligned with her observed beliefs almost in all cases, where the influences of anthropocentrism and ecocentrism were apparent.

2. What are teacher's beliefs about teaching about the environment and in what ways they were enacted in their classroom practice? Zeynab's teaching practices partially aligned with her stated beliefs. While there was alignment between the stated and observed beliefs about teaching content, discrepancies were noted in the teaching methods and activities. While in the interview Zeynab stated the importance of outdoor classes, field trips, visual aids, role plays, and debates, her teaching practices were limited to in-class teaching and discussions about environmental problems.

Chapter 9. Cross-case discussion

Sections 9 and 10 present the cross-case discussion based on the five individual cases described in Chapters 4 through 8. Each of these five cases was approached inductively. That is, I did not impose pre-existing categories from literature or earlier cases, instead, I allowed each case to generate its own codes and categories based on the data. Themes and categories were developed individually for each case, reflecting the teachers' distinctive beliefs and practices. This approach aligned with the multiple case study methodology, which emphasised the value of understanding each case on its own terms before attempting cross-case synthesis. This approach ensured that each teacher's unique context and perspectives were fully acknowledged before any cross-case connections were drawn.

Once the within-case analyses were complete, I began developing sections 9 and 10 through a thematic cross-case analysis, which allowed me to identify and interpret patterns, commonalities, and differences across the five teachers' beliefs and teaching practices, providing deeper insights and strengthening the overall conclusions of the research.

Section 9.1. addresses research questions 1 and 2 - What are teachers' beliefs about the environment? How do these beliefs vary among teachers? For this chapter, I compared the cases in terms of environmental beliefs, particularly focusing on ecocentric versus anthropocentric beliefs. I systematically identified similarities and differences across cases, highlighting convergences and divergences in how teachers conceptualised the environment, their role in relation to it and how it was reflected in their practices.

Section 9.2. focuses on research questions 3 and 4 - What are teachers' beliefs about teaching about the environment? In what ways are these beliefs enacted in their classroom practice? In this chapter, I conducted a similar cross-case thematic analysis, this time concentrating on pedagogical beliefs and classroom practices. Two major themes guided the discussion: content of environmental education and teaching approaches. Again, I examined points of convergence and divergence between the cases, exploring how each teacher's beliefs translated into practice, and what commonalities or distinctions emerged.

While within-case analyses allowed me to reflect on the uniqueness of each case, cross-case comparison allowed me to draw broader insights, which are discussed in sections 9.1 and 9.2.

9.1. The spectrum of environmental beliefs: strong to weak anthropocentrism

This chapter presents a discussion of the findings related to my first and second research questions: What are secondary school geography teachers' beliefs about the environment? How do these beliefs align with their classroom practices? In addressing these questions, I explored the environmental beliefs expressed by my teacher respondents who were teaching at the schools of one of the polluted parts of the Capital – Black City, focusing on their anthropocentric and ecocentric orientations. The analysis also considered how these beliefs are realised in their classroom interactions through their language, expressions, and modes of communication when discussing environmental topics.

Through this discussion, I aim to extend the current literature by examining the nuanced ways in which teachers' environmental beliefs influenced their teaching practices. By situating my findings within the existing body of research, I also highlight how this study contributes to the ongoing discourse on the intersection of environmental beliefs and educational practice, shedding light on the complexities and implications of teachers' anthropocentric and ecocentric perspectives in shaping classroom practices.

Based on the study's main findings, section 9.1.1. argues that teachers in this study predominantly hold anthropocentric beliefs about the environment that were consistently reflected through their espoused and enacted beliefs. The section discusses the inherent nature of human-centred thinking, emphasising that humans, being bound by their specific perspective, inevitably interpret reality through a human lens. Furthermore, it highlights that teachers' beliefs about the environment are not binary, confined to either anthropocentric or ecocentric perspectives but exist on a spectrum of anthropocentrism and ecocentrism, ranging from weak to strong.

Regarding approaches to environmental protection and resource utilisation, the study suggests that anthropocentric beliefs are not inherently destructive. In fact, they can be constructive, as humans possess the capacity to preserve and safeguard environmental resources when they are utilised responsibly. Section 9.1.2. explores this coexistence of constructive and destructive beliefs within the spectrum of espoused and enacted environmental perspectives.

Expanding on the spectrum of environmental beliefs, Section 9.1.3. examines teachers' views on the human-environment relationship, where all teachers believed in a mutual relationship between humanity and nature that aligned with their practices, though their views varied between 'integrationist[1]' and 'separationist[2]' beliefs some

[1] The term I use for the belief that humans are separate from the environment

[2] The term I use for the belief that humans are part of the environment.

[2]

holding integrationist, while others held separationist beliefs that did not always manifest through their enacted beliefs.

This section provides an overview of teachers' anthropocentric beliefs, framed within a context that highlights their theoretical contributions to the field. The research addresses gaps in the literature by bridging the disconnect between teachers' environmental beliefs and their actual classroom practices. Existing studies predominantly examine teachers' stated beliefs about the environment in isolation, with less focus on how these beliefs manifest in real-world educational settings. By focusing on how teachers operationalise their environmental beliefs in practice, this study offers an examination of the alignment between teachers' anthropocentric beliefs and classroom behaviours.

Teachers' anthropocentric beliefs in this study, accompanied by ecocentric beliefs in some cases, contribute to a more nuanced understanding of teachers' beliefs in a new socio-cultural context. Considering a range of research has been conducted to explore teachers' beliefs about the environment in developed and developing countries, in Azerbaijan context, it has been an under-researched area though still in 2002 Azerbaijani law was approved regarding the importance of environmental education (*The Law of the Republic of Azerbaijan on Environmental Education and Enlightenment of the Population*, 2002). Since then, efforts have been made to integrate environmental education into existing curricula, as discussed in Section 1.2.3. However, research remains limited, particularly in exploring environmental education through the lens of teachers' beliefs about the environment and their approaches to environmental education.

Moreover, exploring the nuanced spectrum of anthropocentric beliefs and their complex, dialectical relationship with the environment, I challenge the traditional binary framework of anthropocentric versus ecocentric perspectives as a multidimensional system in which the two are interdependent. Thus, these findings contribute to a growing body of literature that reinterprets anthropocentrism not as a fixed stance, but as a context-dependent, fluid spectrum that allows for more integrated and nuanced approaches to environmental education. By examining how teachers articulate and integrate these beliefs in their educational practices, this study presents a methodological approach that captures how teachers may hold predominantly anthropocentric beliefs but still demonstrate varied degrees of ecocentric values, reflecting a spectrum rather than opposing endpoints.

9.1.1. Strong to weak anthropocentrism: no view from nowhere

In this section, related to my first research question I argue that a) teachers' beliefs about the environment are predominantly anthropocentric representations of the

environment; b) anthropocentric beliefs are inescapable since we tend to think as humans; by agreeing with Mylius (2018) who asserts that anthropocentrism is not only about human superiority, rather, it reflects a human-centred way of interpreting and understanding the world, I argue that all the teachers had anthropocentric beliefs – perceptual anthropocentrism, descriptive anthropocentrism by funelling while some teachers (Jamila and Fariz) also had descriptive anthropocentrism by anchoring; c) anthropocentrism is not a single, rigid concept but rather a continuum, ranging from strong to moderate and weak forms. Strong anthropocentrism emphasises an absolute, human-centred view that prioritises human interests above all else while weak anthropocentrism, on the other hand, still valuing humanity, explicitly and clearly recognises the significant intrinsic value of the environment and nature; d) teachers' environmental beliefs aligned with their classroom practices in most cases.

Anthropocentrism emerged as the predominant belief among these secondary school teachers, deeply embedded within their worldview while Asli and Zeynab occasionally emphasised the intrinsic worth of the environment from an ecocentric standpoint, suggesting a

Types of anthropocentrism	Examples of Teachers' Descriptive Anthropocentrism		Active/passive normative anthropocentrism
	Stated	**Observed**	
Descriptive anthropocentrism by funnelling:	**Jamila**		
	We see the consequences of global warming… climate change causes hundreds of illnesses… cardiovascular diseases, bronchial asthma… Acid rain, chemicals... as the amount of them gets increased, life expectancy declines... (section 4.4.1., p. 141, BI, p. 11)	T. Can you say what the advantages of the trees are? S. we make dishes, houses T. We use them in construction, how do you think we get materials for floors, for ceilings? They are made of wood… What about tables and chairs? Again wood… even these (the teacher shows desks) are made of the bark of trees. Papers, notebooks, textbooks – are all made of wood… (section 4.2.1.1., p. 124-125, CO1, p. 1-2)	passive (weak)
	Fariz		
	If we have ecological collapse, we won't be able to live… plants, animals, water, soil – all will be affected by radiation, it won't be a place for humans to live, it will be the end of life (section 5.2.2., p. 148, BI, p.1)	The pollution not only affects the water but also has a significant impact on marine life. People who fish from the shoreline can particularly notice this impact… It is not just smell, you can taste it… It has permeated the bodies of fish… (section, 5.2.2., p. 148, CO1, p. 2)	passive (weak)
	Mehri		
	We need to protect them (plants), because people need oxygen… If there were no plants, the process of photosynthesis, how would people breathe? We write on them, we eat their fruit, breath, it all comes from them… (section 6.2.2., p. 164, BI, p.8)	Imagine the ozone layer as an umbrella on a rainy day. It prevents you from getting wet.. If a hole appears in the ozone layer – (like having a hole) in the umbrella, the rain will soak us.. (section 6.2.1., p. 162, CO4, p. 4)	passive (weak)
	Asli		passive (weak)
	Environment means my whereabouts and everything that surrounds me. There can be natural or man-made objects… (section 7.2.1., p. 179, BI, p. 7)	Role play - In this concluding scene, the essence of the story unfolds: a few city residents discuss the illnesses they suffer due to the absence of trees. A man joins them, struggling to breathe, and acknowledges that he should not have cut down the	

		trees many years ago (section 7.3.3., p. 193)	
	Zeynab		
	Imagine the impact if everyone discards just one plastic item, the lithosphere gets destroyed. What does that mean? That means the destruction of all humanity (section 8.3.3., p. 212, BI5, p. 23).	Human activities negatively impact nature, pollute the hydrosphere. However, we need these factories, we need natural resources, we need crude oil. So, how should we proceed? How can we get what we need while also not polluting nature, water? (section 8.2.1., p. 200, CO2, p. 4)	passive (weak)
Descriptive anthropocentrism by anchoring:	**Jamila**		
	Ultraviolet radiation can be the end of humanity... humans are superior to other living beings... if humans do not exist, nothing makes sense... (section 4.4.1., p. 141, BI, p. 12)	Every year, around 3 million tons of carbon dioxide are released into the atmosphere due to natural volcanic eruptions. And of course, this has a certain impact on living organisms - on plants, animals, and humans. But why do we mostly talk about humans? You know, right? Among all living beings, humans are the most superior. In the end, it is all about humans (section 4.4.1., p. 141, CO4, p. 2)	active (strong)
	Fariz		
	Humans are more conscious than any other species, they know best what and how they need to do it for environmental management… (section 5.2.3., p. 150, BI, p. 9) Nature is meant to exist for humans (section 5.2.3., p. 151, BI, p. 1)	T. Why do we need to protect the environment? What is the importance of trees and plants? S. They are a source of oxygen… T. What else? S. They are beautiful… T. You mean just for decoration? Besides decoration, the trees are for people. They are part of recreational resources that can be used for tourism and treatment. People need to rest to be healthy... (section 5.2.2., p. 147, CO2, p.5) Protection of the environment means safeguarding human health (section 5.2.3., p. 149, CO2, p. 6)	active (strong)

Table 14. Teachers' anthropocentric beliefs

spectrum of environmental beliefs. I chose to employ Mylius' (2018) classification of anthropocentrism (discussed in 2.2.1) to discuss the teachers' beliefs in this study due to its detailed and comprehensive nature, which provides a nuanced framework for understanding the various dimensions of anthropocentric thought and allows for a more in-depth examination of my respondents' beliefs by empirically applying the classification of anthropocentric beliefs based on real-life situations.

The first type of anthropocentrism proposed by Mylius is perceptual anthropocentrism. The other two types - descriptive and normative are its practical realisations. They complete perceptual anthropocentrism by asserting that "the only entities that can meaningfully be said to exist are either perceptible to humans (in principle) or actually perceived by them (in practice) (Mylius, 2018, p. 174). Given that humans can only perceive the world through their sensory organs does not ignore the fact that entities other than humans have their own way of perceiving their surroundings (Mylius, 2018). Expressed another way, perceptual anthropocentrism reflects the way humans perceive the world, and it is inescapable due to our inherently human-centric perspective. Given that all forms of anthropocentrism originate with perceptual anthropocentrism, and descriptive anthropocentrism reflects this initial perception, it can be concluded that all individuals (including my respondents) begin to perceive the world with an anthropocentric perspective and inherently adopt a form of weak anthropocentrism.

Following perceptual anthropocentrism, Mylius' classification reflects various types of descriptive (omission, funnelling, extrapolation, anchoring, separation) anthropocentrism. The findings of this study show that the teachers held descriptive anthropocentrism since it is a realisation of their perceptual anthropocentrism. However, defining the type of descriptive anthropocentrism became challenging since sometimes cases with teachers reflected different types of descriptive anthropocentrism. Considering all the types of descriptive anthropocentrism are centred around some way of viewing the world from an anthropocentric perspective, the blurry boundary between them seems to be unavoidable and I will focus on the two types of descriptive anthropocentrism – funnelling and anchoring that teachers' beliefs mostly align with (Table 14).

The process of descriptive anthropocentrism by funnelling suggests that narrowing perspectives - funnelling, reinforces and makes more concrete the inherently human-centred way in which the world is perceived. In terms of the funnelling type of anthropocentrism, teachers' espoused and enacted beliefs aligned who mostly viewed the consequences of climate change, benefits of trees for humanity (Jamila, espoused - section 4.4.1., p. 141, enacted - 4.2.1.1., p. 124-125),

protection of plants and ozone layer (Mehri, espoused - section 6.2.2., p. 164, enacted - section 6.2.1., p. 162) and the existence of living and non-living entities for human's use (Asli, espoused - section 7.2.1., p. 179, enacted - section 7.3.3., p. 193) within the limits of their impact on humans and '*funnelled'* these issues through human perception (Table 14). Similarly, Fariz and Zeynab highlighted the pollution of Earth's layers, noting the contamination of the hydrosphere, specifically the Caspian Sea, with crude oil and the pollution of Lithospehere (Fariz, espoused - section 5.2.2., p. 148, enacted - section, 5.2.2., p. 148, Zeynab, espoused - section 8.3.3., p. 212, enacted - section 8.2.1., p. 202), both funneling the pollution through their human-centred perspective of the environment noting the effect of the pollution of the Caspian Sea on the 'taste of fish' and 'destruction of humanity'.

Descriptive anthropocentrism by anchoring can be referred to as strong anthropocentrism which suggests that either humans are at the centre of the Earth with everything revolving around it, or that humans are the pinnacle of evolution, being the most advanced species representing strong anthropocentrism which was one of the observed types with two teachers – Fariz and Jamila (Table 14). In many cases, Fariz anchored humans at the centre of the universe while discussing the environment and environmental problems during the interview by stating that 'nature is meant to exist for humans' (section 5.2.3, p. 151) and during his discussion with students - 'trees are for people' (section 5.2.2., p. 147). One of the most obvious reflections of anchoring was with Jamila, who clearly stated 'humans are superior to other living beings' (stated and observed beliefs - section 4.4.1., p. 141). Mehri did not emphasise human superiority. She believed the major reason for environmental protection was 'for the well-being and health of humans' and 'to save humanity' (section 6.2.3., p. 167) and her discussions with students often focused on how environmental problems affect humanity before considering their impact on climate change, animals, plants, or other factors (section 6.2.2., p. 164-165) which places her beliefs between weak and strong anthropocentrism.The third type of anthropocentrism proposed by Mylius is normative anthropocentrism which is classified as passive and active normative anthropocentrism. Passive normative anthropocentrism can be referred to as a reflection of weak anthropocentrism, enabling thinking through anthropocentric lenses and supporting human dominance and value, but more subtly without explicit advocacy which was observed in most cases with my respondents (Table 14). In contrast, active normative anthropocentrism, which actively advocates human dominance over nature and asserts that nothing has value unless it has value for humans, can be referred to as the other side of the coin of descriptive anthropocentrism by anchoring, which was

the case with Jamila and Fariz and whose beliefs explicitly reflected descriptive anthropocentrism by anchoring (Table 14).

Putting the types of anthropocentrism along a continuum from strong to weak, I refer to passive normative anthropocentrism as weak anthropocentrism, since it manifests human dominance at an unconscious level without explicit advocacy. This also aligns with perceptual anthropocentrism in theory and with descriptive anthropocentrism in practice by funnelling, relevant to all cases in my study. I refer to active normative anthropocentrism as strong anthropocentrism, since it actively involves and advocates for human dominance, as seen in Jamila and Fariz's cases, which also manifests descriptive anthropocentrism by anchoring. Mylius's types of anthropocentrism do not contradict each other but differ in how humans perceive the world. Similarly, teachers in this study filtered the world through their human perception in different ways and their anthropocentric beliefs do not necessarily fall into opposing categories in terms of perceptual, descriptive and normative anthopocentrism. However, teachers' environmental beliefs suggest a range of beliefs - the spectrum of anthropocentric beliefs - from strong (Fariz and Jamila) to moderate (Mehri) and weak (Asli and Zeynab). In section 9.2, I discuss how positive and negative perceptions of the environment align with teachers' environmental beliefs across the spectrum from strong to weak anthropocentrism.

9.1.2. Strong to weak anthropocentrism: constructive and destructive beliefs

This section argues that teachers in this study believed humanity can have a negative effect and a positive effect on the environment, demonstrating what Mies & Shiva (2014) characterised as destructive and constructive anthropocentrism which aligned with their practices. In a similar way to Mies and Shiva's classification of destructive and constructive anthropocentrism, Hamilton (2017) reconceptualises anthropocentrism by distinguishing between old and new forms - the old anthropocentrism assuming unlimited resource use for human benefit, and new anthropocentrism suggesting that humans must responsibly care for the environment to access its resources and challenging the old by focusing on humanity's ability to limit its unrestricted freedom to exploit and destroy the environment. Teaching in Black City meant witnessing the consequences of human destruction daily. It was not just the visible pollution from industrial waste but also the bitter smell of oil from nearby refineries that filled the air that could neither be ignored nor eliminated. These sensory experiences seemed to play a crucial role in shaping the teachers'

perception of the environment and the urgency of its problems. With schools located close to oil tanks and factories and teachers constantly surrounded by this reality, seemed to trigger their thoughts about the harm people cause with much focus on the importance of their ability to do good.

I also argue that teachers' beliefs about anthropocentrism are more aligned with a continuum of strong to weak anthropocentrism, where both constructive and destructive elements **coexist**: a) strong anthropocentrism highly values humanity, with the belief that humans have the potential for a strong, positive influence on the environment. It emphasises humanity's constructive abilities but also acknowledges the possibility of destructive impacts; b) moderate anthropocentrism suggests a balanced approach recognising both constructive and destructive influences of humanity on the environment. It suggests that humans have the power to impact the environment positively but also cause harm; c) weak anthropocentrism - leans toward seeing humans as primarily capable of environmental harm, but also there remains some hope for humanity's positive influence, though limited. In terms of the characterisation above a) teachers like Fariz and Jamila demonstrate a tendency towards strong and constructive anthropocentrism, where human engagement with nature is seen as having the potential to bring value or restoration, though each reflects a different balance between utility and conservation; b) while Mehri reflected moderate anthropocentrism, balancing humanity's ability to contribute positively and negatively, c) Asli and Zeynab exhibited weak anthropocentrism, focusing more on human's destructive potential; d) teachers constructive and destructive beliefs aligned with their practices.

Fariz and Jamila held strong anthropocentric beliefs, evidenced in section 9.1.1. At the stronger end of the continuum, Fariz's and Jamila's espoused beliefs presented a relatively optimistic view of anthropocentrism. Echoing with Mies & Shiva (2014) who present anthropocentrism as a choice between being destructive or creative, Jamila and Fariz believed humans are capable and have the power of recreating, aligning with the constructive form of anthropocentrism while also recognising the destructive consequences of human activities. For example, Fariz believed human development is a way to transform desert landscapes into something 'charming' (espoused - section 5.2.1., p. 147), which shows an aesthetic and utilitarian perspective where the human presence can change the environment, making it beautiful (new anthropocentrism) or ugly (old anthropocentrism). He believed that humans are capable of adopting a constructive approach toward the environment, but he viewed this primarily as a top-down process driven by government policies and international collaboration among major developed

countries to address environmental issues (enacted - section 5.4.1., p. 156-157). Similarly, Jamila's example of the Azerbaijani cartoon during the background interview emphasises the restoration side of human presence in nature (section 4.3., p. 128). The man enters the forest not to destroy but to repair, suggesting a belief that humans can engage in constructive actions that contribute positively to the environment. This aligned with her practices, as she referred to humanity's ability to do good and protect the environment, for example, by using specialised vessels to clean up oil extraction sites and remove oil from the water's surface (subsection 4.2.1.3. p. 129).

Both Jamila and Fariz reflected a belief that humans are superior and can have positive qualities if they are approached thoughtfully, positioning them at the stronger end of the anthropocentrism continuum.

In terms of b) human superiority was not a recurring pattern in Mehri's beliefs as were observed in Jamila's and Fariz's cases. Her beliefs, while a moderate anthropocentric stance, reflected more of a balanced belief between constructivism and detructivism. She believed that technological advancements, such as modern heating systems, demonstrate humanity's power to protect the environment by reducing reliance on natural resources like wood and minimising environmental harm but also indicated the limitation of human progress since rural areas remain excluded from these achievements and which makes humans as major contributors to environemtnal problems (section 6.2.3.2., p. 167). While teaching her students, Mehri illustrated constructive and destructive beliefs through a metaphor, describing environmental protection as a pearl necklace (section 6.2.1., p. 163). Constructively, it suggested that people should recognise the deep interconnection between all aspects of the environment, as every part depends on careful, coordinated protection. On the other hand, the metaphor also warned of a destructive approach: if care is not taken, if actions are disorganised – 'pearls are not neatly arranged', it can worsen environmental problems.

In terms of c) Zeynab and Asli provide examples that lean more toward cautious, weaker forms of anthropocentrism, emphasising humans' destructive role while still expressing hope for its potential for environmental conservation. At this weaker end of the continuum, Asli and Zeynab demonstrated a more cautious approach, where environmental concerns are prioritised over human-centred benefits on several occasions with much focus on destructive humanity rather than constructive. Seemingly avoiding and acting against human superiority and emphasising human dependence on nature, they both believed current humanity is destructive (Asli – section 7.2.2, p. 181-183, Zeynab – sections 8.2.1., p. 199). Asli's

classroom discussion about atmospheric pollution (section 7.3.1., p. 186) reflected a pragmatic view that encouraged small-scale, practical efforts on an individual level to reduce human impact. With less hope for large-scale human intervention, she called her students to do ‘at least what they can.’ Similarly, Zeynab reflects on humanity’s destructive nature with her students, emphasising that despite being granted a conscious mind, we fail to use it responsibly (section 8.2.3., p. 205) criticising that instead of preserving what we have, we harm the environment and its resources urging that we act with care to reduce human damage and live in harmony with nature. These teachers’ beliefs reflected the effects of destructive anthropocentrism as current, happening, and visible, while constructive anthropocentrism was seen more as a ‘hope’ for the future. This reflects that they perceive current humanity more as destructive rather than constructive.

Applying Mies and Shiva's (2014) constructive and destructive anthropocentrism, this study moves beyond theoretical discussion in the literature to empirically reveal that teachers hold both types of beliefs at varying levels. Moreover, context dependency of environmental beliefs emerges as a result of teachers’ perception of the environment and environmental issues shaped not just by facts or policies but by direct exposure to its declining state in Black City. Experiencing environmental problems firsthand, especially in a heavily polluted area, seemed to make teachers place extra emphasis on the need to be constructive for positive change, rather than only focusing on the destructive side of the human-environment relationship. While teachers elsewhere can also reflect in this way, such firsthand experience appears to intensify the depth and urgency of that reflection.

These findings underscore that teachers’ beliefs about anthropocentrism are neither fixed nor binary, aligning with literature that emphasises the complexity and context-dependency of environmental perspectives (Schultz et al., 2004; Thompson & Barton, 1994; Yavetz et al., 2014). Anthropocentrism and ecocentrism have been traditionally depicted as oppositional frameworks, with anthropocentrism often seen as an inherently negative stance toward environmental protection (e.g. Dunlap et al., 2000). However, this study challenges such categorisations by highlighting anthropocentrism as an inherent aspect of human nature and aligning with Wiseman & Bogner (2003), who suggest that anthropocentrism can coexist with environmentally responsible attitudes and actions. However, this study diverges from Wiseman and Bogner’s view that these concepts are independent, instead supporting Dunlap and Milfont & Duckitt’s position that they are interdependent.

According to O’Riordan (1989) ‘A given individual may not hold a pure ‘column’ of any faith. But people tend to fit into particular patterns of world view at

various times in their lives' (p. 91). Specifically, teachers with strong or moderate anthropocentric views in this study shared a belief in humanity's potential to enact positive environmental changes, resonating with arguments by Wiseman & Bogner (2003) that anthropocentric attitudes do not necessarily lead to environmentally harmful behaviours and individuals with strong anthropocentric beliefs can still have high preservation beliefs. Conversely, teachers with weaker anthropocentric beliefs, while still viewing resources as meant for human use, frequently expressed ecocentric attitudes by actively opposing exploitative and destructive anthropocentrism, a perspective echoed by Gough et al. (2000) who argued that a 'partially ecocentric viewpoint is possible' that can coexist with moderated anthropocentric beliefs (p. 45).

The study mirrors findings by Milfont & Duckitt (2006) who indicate a strong correlation between preservation and utilisation beliefs, suggesting they may not be independent, instead "threatening the independence" of each as distinct factors (p. 41). Using the 12-scale Environmental Attitudes Inventory to assess environmental attitudes, they indicate that rather than forming a two-dimensional model, the factors could represent a single, bipolar construct, with preservation and utilisation at different ends (Milfont & Duckitt, 2006). Rather than conceptualising preservation and utilisation as two independent dimensions, they can be understood as opposite ends of a single continuum: a stronger preference for preservation corresponds to a weaker preference for utilisation, and vice versa. This is partially relevant to the findings of this study since teachers appeared to cluster toward one end of the continuum, characterised by either strong anthropocentric and limited ecocentric beliefs or toward the opposite end, marked by strong ecocentric beliefs and weak anthropocentric emphasis. However, it might not always be the case since individuals holding strong preservation (ecocentric) beliefs can still hold strong utilisation (anthropocentric) beliefs. (Munoz et al., 2009; Wiseman & Bogner, 2003). The belief system of my respondents appears to be two-dimensional because they expressed varying degrees of both anthropocentric and ecocentric views, rather than aligning strictly with one or the other. This indicates that these beliefs are not opposites on a single continuum, but rather distinct yet interrelated dimensions on different continuums: one dimension captures the degree of ecocentric concern valuing nature intrinsically while the other capture the degree of anthropocentric reasoning valuing nature instrumentally.

Moreover, this study contributes to the existing literature by illustrating how teachers' beliefs manifest themselves in real-world teaching practices. A number of studies focused primarily on teachers' theoretical or self-reported beliefs toward the environment (Ballantyne, 1995; Cutter-Mackenzie & Smith, 2003; Desjean-Perrotta et al., 2008; Farias et al., 2018; Lwo et al., 2017; Quinn et al., 2016), yet few have

explored how these beliefs translate into classroom settings. By highlighting the relationship between teachers' environmental beliefs and their instructional methods, this research supports recent calls from Stevenson et al. (2013) for a more context-sensitive approach to environmental education that considers the educational experiences.

The human perception of the environment mirrors our relationship with it, much like two sides of the same coin. How we perceive the environment shapes our mutual interaction with it. In the following section, I will explore this relationship with the environment, examining how my respondents expressed their perceptions of the environment and how teachers' separationist and integrationist beliefs align with the continuum of anthropocentric beliefs.

9.1.3. Strong to weak anthropocentrism: integrationist and separationist beliefs

During this study, two nuanced perspectives emerged regarding the relationship between humans and nature: 1) humans and nature are interrelated and 2) humans are part of the environment. Although the two perspectives may initially seem similar, further analysis showed contextual differences between them[1]. In this study: 1) all the teachers acknowledged the human-nature interrelatedness; 2a) while some teachers (Jamila, Mehri and Fariz) had separationist beliefs about the environment, where they did not refer to humans as being part of it but as independent yet interconnected with the environment[2], 2b) others (Asli and Zeynab) had integrationist beliefs where humans were mentioned as part of the environment. Teachers' beliefs aligned in terms of 1) while arguments 2a) and 2b) could not be supported by enacted beliefs.

Under 1) in all cases, teachers' perception of the environment was a mutually interrelated relationship between humans and the environment (Figure 35). Fariz's statement during the interview, 'If we destroy nature, it will destroy us as well… nature will make us pay for it,' (section 5.2.4., p. 150) and as observed during his teaching 'Protection of the environment means safeguarding human health' (section

[1]Being interrelated does not necessarily mean being part of the same entity. For instance, pollinators, such as bees, butterflies, and birds, are distinct organisms that are not physically part of flowering plants. However, they are interrelated through the process of pollination, which is crucial for the reproduction of many plants and the survival of pollinators.

[2] Very often teachers' perception of the environment was intertwined with the concept of nature. Although during the interview questions, I used the single term 'environment' it was usually used interchangeably by teachers. The research-based literature also reports that teachers' conception of the environment and nature is usually blurred, who often refer to them as mutually exchangeable concepts (e.g. Flogaitis, 2003; Nyberg et al., 2020)

5.2.3., p. 149) underscores a belief in environmental reciprocity, where human impact on nature inevitably affects humanity itself. Similarly, Mehri emphasises the practical necessity of protecting plants ‘because humans need oxygen,’ (stated, section 6.2.1., p. 162), highlighting the basic interdependence between humanity and their environment. Moreover, while explaining the students environmental pollution, she refers to the metaphor of a pearl necklace where the beads are considered components of the environment which are related (section 6.2.1., p. 163). Jamila provides a more complex illustration of this mutual relationship by speaking about desertification during the interview and defrostation while teaching her students as a result of human activities which ultimately impacts human health and calls for a positive impact so that it can reflect back positively (section 4.2.1.3., p.129).

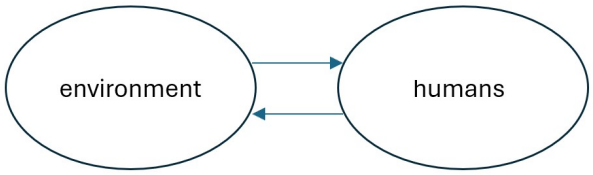

Figure 35. Human-environment is interrelated

Under 2a) though all the teachers believed the environment and humans are in a mutual relationship, this relationship was perceived by Jamila, Fariz, and Mehri mainly with a focus on material gain rather than fostering intrinsic appreciation and viewing it as an interconnected system. They saw humans as separate from the environment and the environment as a ‘provider’ of resources, aligning with separationist beliefs and strong anthropocentrism. By stating ‘Natural resources provide us with our basic needs… with food, energy, and raw materials for the production of goods… it is a natural process’ (section 4.2.1.1., p. 124) Jamila takes a resource-driven approach where the environment is reduced to a resource with less focus on the ecological system as a broad concept. Similarly, Mehri links the value of plants and trees to the tangible benefits they provide to humans (section 6.2.2., p, 165) and Fariz notes that every fundamental element required for human survival - air, water, and land - originates from nature (section 5.2.2, p. 148). Fariz takes it a step further by asserting that humans are responsible for 'ruling' the environment, emphasising their role as conscious entities (section 5.2.3, p. 152). This perspective removes humans from their natural place within the ecosystem, not recognising the mutual, cyclic relationship between humans and the environment and positioning humans at the top of a hierarchy as the strongest beings, reflecting separationist beliefs. Although these beliefs emerged during the interviews, the idea of humans being separate from nature/or part of it was not

mentioned during their teaching, making it difficult to determine whether their stated beliefs aligned with their classroom practices.

Regarding the argument 2b), in some cases (Asli and Zeynab), human-environment relationships went beyond mere interrelation: rather than simply interacting with the environment, the relationship was one of being an integral part of it (Figure 36). Both Asli and Zeynab's perceptions of the environment were particularly complex, as they believed humans are part of the environment. Moreover, they distinguished between the natural and built environments, considering both, as well as humans as components of a broader ecological context. Both viewed the environment as comprising everything around them including humans, integrating both living and non-living elements, natural landscapes, and built environments. Asli's beliefs of an environment that includes both natural and man-made objects implicitly acknowledge that humanity is part of this broader context, shaping and being shaped by its surroundings (section 7.2.1., pp. 179-180). Zeynab, while more explicit about the tensions between these elements, also sees humans as inseparable from the environment, where all living and non-living entities – animals, plants, humans, trees, mountains, water - coexist (section 8.2.1., p. 199).

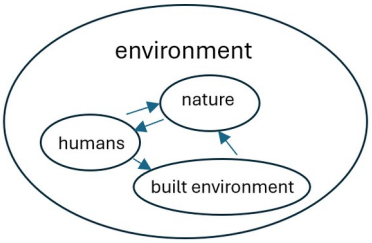

Figure 36. Environment as a complex relationship

Though integrationist beliefs were part of both Asli and Zeynab's espoused environmental beliefs as discussed in sections 7.2.2., 7.3.3. (p. 181-183, p. 188-194) and 8.2.3. (p. 203-206) respectively, seeing humans as part of nature did not come up during classroom teaching.

As said under a) all teachers in the study believed in the interrelatedness of humanity and the environment. However, under b) Jamila, Fariz, and Mehri, who exhibited separationist beliefs that align with strong anthropocentric beliefs, Asli and Zeynab had integrationist beliefs, reflecting a more nuanced perspective that suggests that teachers' beliefs about humanity's role in the environment may exist on a continuum from strong to weak anthropocentrism, rather than fitting neatly into a single category. Prior research (e.g. Desjean-Perrotta et al., 2008; Farias et al., 2018; Flogaitis, 2003) has highlighted that many teachers lack a holistic understanding of the environment as an interconnected system. However, the present study shows

that even within an overarching anthropocentric view, there is room for integrationist beliefs, as seen with Asli and Zeynab suggesting teachers' beliefs may be more complex.

Teachers' beliefs might be context-dependent since a longitudinal study in a neighbouring country Turkiye among 63 pre-service science teachers (with 55 participating in the second stage) revealed that participants did not recognise the complex and interrelated relationships between components of the environmental system (Yücel & Özkan, 2018). Notably, this study was conducted in Kocaeli, one of Turkie's polluted areas, known for its waste disposal sites, oil refineries, and chemical factories. Kocaeli is very similar to the location of the current study, Black City, Keshla in Azerbaijan, as both are highly industrialised and environmentally polluted areas with significant oil and chemical industries. The results of another study from Turkiye, which involved 463 pre-service primary school teachers, also indicated that the teachers perceived the environment as nature but not as a 'unity of systems' and humans were not part of their perception of the environment (Ahi et al., 2017). The industrial and environmental challenges in these locations likely shape teachers' perceptions, potentially reinforcing anthropocentric views as a coping response to living in heavily polluted areas. This study contributes to the field by providing context-specific insights that deepen our understanding of how local environmental conditions may influence teachers' environmental beliefs.

Moreover, the findings add to the discourse on the challenges of achieving a balance between anthropocentric and ecocentric perspectives in teaching about the environment. Building on Huckle's (2006) concept of 'weak anthropocentrism,' which advocates for a middle ground where human and non-human interests are aligned, this study underscores the need for educational frameworks that foster this balance. While some educators like Asli and Zeynab demonstrated an openness to ecocentric values, the prevailing anthropocentric emphasis among others suggests a gap in promoting balanced environmental worldviews. Integrating both anthropocentric and ecocentric values, as Norton (1991) suggests, could encourage educators to foster environmental stewardship that serves both human needs and the intrinsic value of the natural world.

9.2. Dimensions of environmental education: content and strategies

This section presents a discussion of the findings related to my third and fourth research questions: *What are teachers' beliefs about teaching about the environment, and In what ways are these beliefs enacted in their classroom practice?* These questions aimed to investigate both the stated and observed beliefs of teachers concerning environmental education, with a particular focus on the content they prioritise and the activities they use to teach.

To address this research question, the findings are examined in terms of teachers' beliefs and practices in two key areas: a) what to teach - ***content***, which includes knowledge, behaviour, and practical skills and addresses teachers' beliefs about the environment and b) how to teach - ***strategies and methods***, categorised into indirect and direct, experiential teaching approaches that address the ways these beliefs are enacted in their classroom practices. This study draws on in-depth insights gained from the interviews and observations conducted with each teacher, highlighting key themes that emerged from their experiences regarding five teachers in the three schools of Black City. The qualitative approach allowed for a rich description of teachers' perspectives, considering both shared and differing viewpoints. Based on teachers' experiences shared during the interviews and observations regarding these two dimensions - what to focus on while teaching – either knowledge, behaviour or skills and how to teach – whether through direct or indirect approach, provide a framework for analysing how teachers conceptualise and implement environmental education in their classrooms since these aspects were not consistently reflected across all teachers' discussions and practices.

In Section 10.1, the discussion focuses on teachers' beliefs regarding the content of their teaching where knowledge delivery was a priority for all teachers, reflecting a shared belief in its centrality to environmental education and aligned with their classroom practices. This belief was accompanied by varying levels of support for promoting behaviour change and developing practical skills by all teachers, though these elements were not prioritised to the same extent as knowledge delivery and some misalignment was observed between espoused and enacted beliefs. Section 10.2. argues that this prioritisation of knowledge was realised in teachers' practices with a notable focus on indirect learning. While all teachers believed in the importance of direct learning during the interviews, the degree to which direct teaching was used varied significantly across cases and only two teachers (Mehri and Asli) employed direct methods in their practice. Indirect teaching involved methods such as lectures, storytelling, discussion, demonstrations and essay writing

while direct teaching included hands-on activities, fieldwork, and experiential learning opportunities.

Teachers' emphasis on knowledge transmission over experiential learning raises important questions about how environmental education is conceptualised and implemented. As argued by Cotton (2006) who highlights the discrepancy between the theoretical understanding of environmental education and the environmental education happening within the classrooms, the tension between cognitive knowledge delivery and the broader goals of environmental education, such as fostering values and behaviour change, leads teachers to often struggle to balance these aspects effectively. This resonates with Tilbury (1995) and Dillon et al. (2016) who argue that while knowledge transmission remains a cornerstone of environmental education, a pedagogical shift toward more participatory and action-oriented learning methods is essential for achieving meaningful outcomes.

This variation suggests differences in teachers' interpretation of how environmental education is enacted, as well as possible constraints influencing their teaching methods. By examining these variations, section 10.3. highlights the complexity of aligning beliefs with classroom practices in environmental education by shedding light on the barriers and illustrating how teachers' pedagogical choices are shaped not only by their beliefs but also by external constraints, thus providing insights for policymakers and curriculum designers seeking to support more holistic approaches to environmental education.

9.2.1. What to teach: knowledge, behaviour, practical skills

In this section, I address the third research question by discussing teachers' beliefs about teaching the environment through an analysis of their teaching content. This includes exploring their priorities, whether they emphasise knowledge, behaviour, or practical skills. The results of cross-case analysis indicate that:

Espoused beliefs - the primary focus for all teachers was a belief that their teaching should focus on the delivery of knowledge (Appendix C). Alongside this, almost all the teachers (except Fariz) believed that their teaching should also be aimed at promoting behaviour change;

Enacted beliefs – While knowledge delivery was a key focus for all teachers, promoting behaviour change and developing practical skills were not consistently emphasised across all cases. Jamila, Asli, Mehri and Zeynab focused on teaching that instilled environmental behaviour, while Asli and Mehri also integrated building practical skills into their teaching. Since it was not possible to observe actual behaviour change, this discussion focuses on how teachers' practices supported

behaviour change, rather than on the behaviour change itself. Some placed greater emphasis on one aspect over the other, depending on the context or specific teaching approach.

Jamila and Fariz both emphasised knowledge delivery in their teaching through structured explanations of natural processes and ecosystems during the interviews and observations. Jamila's teaching approach centered on delivering practical, locally grounded environmental knowledge using diverse visual and multimedia aids. Moreover, she integrated behaviour change strategies by engaging students in real-world examples through discussion. The alignment was observed between her stated beliefs and observed practices which underscores her belief about linking environmental knowledge with proactive behaviour change. Her belief regarding the importance of environmental knowledge was evident during the background interview when she discussed the food chain as a cycle of energy transfer (section 4.2.1.1, p. 118) and the threats to and extinction of species (section 4.2.1.2, p. 121), highlighting the human role within it. Her detailed description of the Mingachevir reservoir during the interview, stating, ‘Mingachevir reservoir is built close to Kur-Araz Lowland, which is below sea level... because of its vast area the reservoir doesn’t have a concrete lining which makes it possible for the water to leak’ (section 4.2.1.1, p. 119), exemplifies her approach. By explaining the location of the reservoir, its design, and the consequences of its design, Jamila underscores her focus on delivering factual and technical knowledge about the interplay between geography and human infrastructure. Her belief in knowledge delivery was observed in the cases when she talked with students about the physical characteristics of equatorial forests (section 4.2.1.1, p. 118), the use of synthetic materials in construction (section 4.2.1.2, p. 121), methods for restoring natural ecosystems (section 4.2.1.3, p. 123), etc. Moreover, her espoused beliefs regarding linking knowledge to the local environment and supporting it with visual resources were consistent with her observed beliefs (section 4.3, p. 128).

While Jamila prioritised knowledge, she also believed in the importance of promoting environmental behaviour, reflected in both her expressed beliefs and classroom practices (section 4.3., pp. 128-129).

Like Jamila, Fariz’s espoused and enacted beliefs placed a strong emphasis on knowledge delivery with a focus on the local environment. Fariz proposed that the foundational knowledge for students should be rooted in the physical characteristics of their immediate surroundings, emphasising the importance of helping students develop an awareness of their local environment (section 5.3., pp. 148-150). In the background interview, Fariz elaborated on his belief that knowledge delivery about

the environment should begin with geographic elements such as the terrain, climate, and water bodies specific to the local area: ‘It would be better if we started teaching geography from where we live. First, we start with the terrain, then the characteristics of the climate, then internal waters like rivers, lakes, groundwater, etc. of our country, and then related to that, the biosphere (section 5.3., pp. 148-149). He believed that knowledge delivery should be relevant and context-specific. Like Jamila, when teaching students about the pollution of water reservoirs, he began with issues affecting local bodies of water, specifically, the Caspian Sea, before expanding to broader contexts, such as the Black Sea, the Mediterranean Sea, the Gulf of Mexico, and the Caribbean Sea. By connecting these local concerns to larger environmental systems like the hydrosphere, he linked familiar physical spaces to wider ecological contexts and this was consistent during the interviews and observations.

Mehri also believed that delivering knowledge about the environment and environmental problems was important, and there was alignment between this belief and her actual practice. During the interview, she stated that it is important to teach students certain topics, provide them with background knowledge, and, when possible, connect this knowledge to real-life examples (section 6.3.1., p. 165). Moreover, Mehri’s stated beliefs reflected the importance of teaching students about various geographical concepts - mountains, valleys, plains, elevations, lowlands, plateaus, natural zones, vegetation, and wildlife believing that knowledge of these concepts which is crucial for fostering a connection with nature (section 6.3.1, pp. 165-166). Her dialogues with students on ecological challenges (section 6.2.1, p. 157), Amazon forests and Greater Caucasus, Lesser Caucasus, and the Talysh Mountains (section 6.3.1., p. 166), the movement of Earth (section 6.3., p. 163) exemplify her knowledge-focused approach. Her teaching extended beyond the classroom as she took students to the school garden, where they could directly observe natural processes, such as plant germination and soil composition (section 6.3.1, p. 167). While knowledge delivery was central to her approach, Mehri also encouraged pro-environmental behaviour by motivating students to collect and recycle unused papers and notebooks and actively participating in litter collection (section 6.3.1, p. 165). Additionally, she emphasised developing practical skills, guiding students to create pencil cases from plastic bottles and build bird nests during class activities (section 6.3.3, p. 170-171).

While focusing on knowledge transmission, Asli and Zeynab promoted pro-environmental behaviour which was consistent across their espoused and enacted beliefs (Asli – section 7.3., p. 179, Zeynab – section 8.3., pp. 203-204). They both instructed their students to study and deepen their knowledge through discussions

and textbook readings about the environment (Asli - section 7.3.1, p. 180, Zeynab - section 8.3.1., p. 205), teaching them about environmental pollution, human impact and its challenges (Asli - section 7.3.1, p. 163, Zeynab – section 8.3.2., p. 206) and advocating for active participation (Asli - section 7.3.3., p. 183, Zeynab – 8.3.1., p. 205). Beyond delivering knowledge, both teachers fostered behaviour change by guiding students to care for nature, including trees, plants, and animals, and to practice actions like recycling and avoiding littering (Asli – section 7.3.1., p. 180-181, 7.3.3., p. 183, Zeynab – section 8.2.2., p. 196-197, 8.3.3., p. 207).

Additionally, Asli enriched students' learning by providing historical knowledge about the parks they visited - Villa Petrolea and Ganjlik Park (section 7.3.3, p. 185) and encouraged experiential learning through activities aimed at helping students understand the structural and functional characteristics of soil (section 7.3.2, p. 183). Emphasising the importance of fieldwork to foster a direct connection with the environment, Asli organised field trips to parks that were once among the most polluted areas of the city and during these trips, students engaged in role-playing activities to highlight the importance of protecting trees and building practical skills, such as planting flowers (section 7.3.3.).

As seen in the examples above, all teachers incorporated knowledge delivery into their practice, though its prominence varied being more central for some, while others balanced it with additional priorities such as building environmental behaviour and practical skills. This aligns with recent studies, such as Gugssa & Aasetre (2022), which demonstrates a similar prioritisation of environmental knowledge dissemination by educators. The focus on cognitive outcomes in environmental education reflected in this study also aligns with findings from Brias-Guinart et al. (2023), who observed that practitioners in Finland and Madagascar primarily emphasised the cognitive domain in their nonformal EE programs. Interestingly, the North American context presented by Fraser et al. (2015) reveals a broader perspective, incorporating both knowledge and behaviour, though these dimensions often appear separately rather than as an integrated outcome. This difference highlights the contextual variability in EE approaches and underscores the necessity for a more unified strategy that bridges cognitive and behavioural goals (Fraser et al., 2015). Furthermore, empirical studies underscore the potential benefits of increased environmental knowledge in fostering pro-environmental behaviour, as individuals often lack clarity on actionable steps despite caring about environmental issues (Ajaps & McLellan, 2015).

A higher level of education, which correlates with a greater perception of environmental problems (Kvaløy et al., 2012), may provide a pathway to addressing this gap. However, while the emphasis on knowledge aligns with the belief of educated young adults that a cognitive foundation is crucial for fostering pro-

environmental behaviour (Ogunbode & Arnold, 2014), it also raises questions about its sufficiency. Kollmuss & Agyeman (2002) caution against a linear model of pro-environmental behaviour, arguing against the assumption that 'more knowledge will lead to more enlightened behaviour' (p.241). This critique is echoed by Evans & Ferreira (2020) who highlight that even when individuals possess knowledge of environmentally harmful practices, their actions often remain unchanged asserting that 'knowledge about the environmental impact of single-use plastic bags does not necessarily stop people using these as rubbish bin liners, nor does it necessarily lead to people using more environmentally friendly options' (p. 29) and emphasising the need for transformative and holistic pedagogies.

In line with this, the study highlights the limitations of a knowledge-centric approach in addressing the broader goals of environmental education, such as fostering behaviour and practical skills. These findings support the assertions of Haubrich et al. (2007) and Sandell et al. (2005) regarding the importance of integrating knowledge with geographical skills and values to develop environmental competencies. Sandell et al. (2005) further emphasise that practical skills, which enable learners to apply theoretical knowledge, are vital in bridging the gap between awareness and action.

In response to these challenges, the literature points toward more integrated and holistic pedagogical approaches. Clark et al. (2020) advocate for an EE framework that balances knowledge with practical skills, social and cultural dimensions, and a connection to nature, emphasising behaviour change as a fundamental outcome. This approach resonates with the findings of this study, which indicate that while knowledge dissemination remains central, a more balanced emphasis on behaviour and practical skills is necessary to meet the transformative goals of environmental education.

Having discussed the content of teaching, which highlights a predominant focus on knowledge delivery, the discussion now turns to the methods used to deliver this content. The next section examines how teachers employ direct and indirect approaches to engage students with environmental education.

9.2.2. How to teach: direct and indirect experiences

Upon analysing the respondents' approaches to teaching environmental topics in this study, it became evident that environmental education was primarily conducted through indirect learning within classroom settings. While during interviews, all teachers emphasised the value of direct learning, such as fieldwork, as an essential component of environmental education, during the classes they were

occasionally employed (Table 15). Teaching about the environment primarily involved indirect learning methods such as the use of textbooks, role plays, discussions, debates, presentations and exhibitions. Teachers like Jamila, Fariz, and Zeynab prominently utilised classroom-based methods which were reflected in their stated and observed beliefs (Table 15). For instance, during the interviews, Jamila emphasised activities like the use of supplementary books, films, cartoons, and pictures that she used during her teaching as well (section 4.3.1., p. 130, section 4.3.2., p. 132-133). Fariz's stated beliefs reflected the use of teaching resources – mainly textbooks and employing different direct and indirect teaching methods such as debates, pair works, and field trips (section 5.3., p. 149-150). During the interviews Fariz and Zeynab highlighted that they employed debates on specific topics such as deforestation (Fariz, section 5.3., p. 150) and Europeans' discovery of the New World (Zeynab, section 8.3.1., p. 206) though no such classes were observed during the time I visited their classes Mehri also had an alignment between her stated and observed beliefs since she employed a range of teaching methods during her classes (sections 6.3.2 and 6.3.3., p. 168-172).

Though during the interviews, Jamila, Fariz and Zeynab stressed the importance of direct learning, they did not employ any type of experiential learning during the classes I observed (Jamila - section 4.3., p. 130, Fariz - section 5.3., p. 149, Zeynab – section 8.3.1., p.

Activities / Teachers	*indirect*		*direct*	
	stated	**observed**	**stated**	**observed**
Jamila	We can have **role-playing** activities... For motivation, I could show a **video** clip from a **movie** about environmental pollution (section 4.3., p 130, BI, p. 18)	**Textbooks, pictures, discussions, exhibition, debates**	First of all, learning about the living environment. Where do these kids live? … The living environment comes first… The kids live there, so for them, that's the best example. (section 4.3., p. 128, BI, p. 17-18)	_
Fariz	We have **debate** classes in certain sections, particularly for 6th and 7th graders. For example, we hold debates on topics like the Amazon rainforest and the issues surrounding its deforestation… We work **in two groups**… When working in groups, some kids engage while others do not, in pairs everyone is involved (Section 5.3., p. 150, BI, p. 23-24)	**Textbooks, discussions**	The first thing that comes to mind when you say environment is nature… It would be more effective if we could spend more time in nature by doing **outdoor projects** while we teach about the environment, biosphere… such as measuring humidity... we need resources for this…(Section 5.3., p. 150, BI, p.23)	_
Mehri	If our topic is vegetation or animals, first I explain the topic, then I would use short **video** recordings to make 'in-class' fieldtrips for the students. Videos can bring real-life examples into the classroom. They make abstract concepts more tangible (section 6.3.2., p. 168, BI, p. 13)	**Textbooks, pictures, discussions, debates, role play, essay writing, puzzle solving**	I'd take them somewhere **outside of class**, maybe to the Botanical Institute, a nearby **park**, or even to the Caspian Sea coast where we know there's a boulevard. We could take a trip there so the kids can see the diversity of plants and animals firsthand. There are also plenty of trees in our school yard, so the soil and plant life are clearly visible. I want the kids to see these things up close, learn to love them, and know how to protect them. (section 6.3., p. 163, BI, p. 13)	**Outdoor class in the school garden**
Asli	But I think it's not enough to just teach students about the consequences of littering the environment, we need to show them how that litter can directly affect their own lives... If we can even **act it out** somehow and show the consequences in a real, **visual way**, I think they'll start thinking more about how it affects them (section 7.3., p. 179, BI, p.16)	**Textbooks, role play,discussions, storytelling, presentation**	A teacher can do a lot. We can go on field trips, step outside the classroom, and the kids can see where the waste is. We can clean up those areas together (section 7.3., p. 178-179, BI, p.19)	**Field trip to a park**
Zeynab	the **debates** are usually interesting. We covered how Europeans discovered the New World, how they went and created colonies… Some of the students **played the role** of Native Americans, even dressed up in traditional costumes with accessories and face paint, others played European explorers... (section 8.3.1., p. 206, BI, p. 21)	**Textbooks, discussions**	We cover the theoretical part, explain it, and they understand, so they have the information. After that, it's necessary to organise a real-life excursion to explain everything to them in more detail (section 8.3.1., p. 205, BI5, p.17-18)	_

Table 15. Alignment/misalignment between espoused and enacted beliefs regarding indirect and direct learning

205) (Table 15). Although teachers tend to use field trips and outdoor activities less frequently, these methods were among the most desired teaching approaches in this study, aligning with findings from other research (Ko & Lee, 2003). There were instances of direct learning since Mehri and Asli incorporated field trips and outdoor teaching, such as organising a class in a school garden (Mehri, section 6.3.1., p. 167) or visiting parks (Asli, section 7.3.3., p. 184). While Asli's outdoor lesson integrated diverse yet interconnected activities into a cohesive, experiential learning approach - visiting a park that had been established in what was once one of the most polluted areas, planting flowers, and role-playing to protect trees, Mehri focused on increasing students' awareness and interest in protecting the environment while nurturing a love for animals by encouraging students to bring their pets to school as a hands-on way to share their affection for the animals and highlighting the importance of safeguarding all living beings through the activities like making nests in trees. These examples represented the inclusion of experiential learning to expose students to nature directly. Out of the 23 classes I observed, the majority took place indoors within a classroom setting with two above-noted exceptions.

This study supports and extends the existing body of research by exploring how direct and indirect experiences are applied in a new context - in a different cultural background and within the underprivileged community, highlighting the critical role of direct, enactive learning in fostering environmental awareness, attitudes, and behaviour which is regarded as 'an essential, critical and irreplaceable dimension' of teaching about the environment (Kellert, 2002, p. 141). Moreover, findings from this study bridge theory and practice by contributing to the arguments by Elliott & Davis (2009), who challenge the misconception that 'real learning takes place indoors' (p. 70) since direct learning of the environment was one of the shared perspectives of teacher respondents in this study. Empirical research findings from previous research (e.g. Ajaps & McLellan, 2015) also indicate that teachers emphasise the importance of hands-on and action-oriented teaching, viewing outdoor activities as essential tools for connecting students with nature.

Similarly, Häggström et al. (2020) highlight the significance of learning environments outside school settings which they consider important for student agency and empowerment in fostering ecological literacy. However, considering the differences in the concept of place between the current study and the one conducted by Häggström, this research challenges the strong emphasis on place-based pedagogy found in previous work. The earlier study was conducted in two schools in Sweden and framed 'place' within the limited context of a school playground and a nearby forest - environments generally associated with positive feelings such as exploration, enjoyment and connection to nature. In contrast, the current study was conducted in Black City, an environment burdened by decades of pollution and capable of provoking distress or anxiety. This contrast complicates the notion that place-based learning inherently fosters

positive engagement, highlighting the need for a more nuanced understanding of how different environments shape the understanding of environment and human-environment relationships.

This research also contributes to findings by Reid (2000), Loughland et al. (2002) and Moroye & Ingman (2018), who stress the importance of focusing on students' personal experiences of the environment, even when imperfect. Students tend to understand environmental issues through their direct impact on daily life rather than abstract concepts like water scarcity, resource depletion (Loughland et al., 2002) or drought (Moroye & Ingman, 2018) that they do not personally experience which aligns with the beliefs of teachers in this study who stated, “students can analyse the problems of the place they live, that they directly experienced rather than the problems that they have never experienced” (Fariz, section 5.3., p. 148). Similar beliefs regarding the importance of teaching students about local environmental problems were emphasised by Asli (section 7.3.3., pp. 183-184) and Zeynab (section 8.3.1., p. 205).

While direct experiences are often emphasised for their transformative impact, research suggests that indirect educational approaches can also significantly influence environmental thinking (Kil, 2016; Mobley et al., 2010; op de Beeck, 2018; Sun et al., 2023; Zelezny, 1999). In discussing the latest preference for exploring the natural world rather than texts, op de Beeck (2018) argues that books offer exceptional opportunities for students and suggests that 'the books we study might lead us into a natural world as close as a backyard or local park, or familiarise us with locales as distant as the Arctic' (p. 80), supporting the idea of the importance of studying nature alongside books. Similarly, Mobley et al. (2010) propose that classic environmental books can enhance environmental sensitivity and behaviour. The effectiveness of environmental education in classrooms, compared to nontraditional settings, was confirmed in a meta-analysis by Zelezny (1999), who found that classroom interventions play a more significant role than those in nontraditional environments.

While emphasising the significance of direct learning, this study underscores the need for future research to further investigate the integration of indirect learning with direct experiences in nature. Millar & Millar (1996) note that direct experiences often evoke stronger emotional connections, whereas indirect methods stimulate cognitive thinking. Duerden & Witt (2010) provide further nuance, showing that indirect experiences are more effective in transmitting knowledge, while direct experiences yield comparable outcomes in both knowledge acquisition and attitude change. This echoes recent literature that suggests both indirect and direct learning should be integral components of environmental education (Corney & Reid, 2007; Kellert, 2002; Mobley et al., 2010; Sandell et al., 2005). Discussion, debates, and fieldwork are important for students to build and improve their sustainability thinking (Corney & Reid, 2007).

Lessons should include activities like panel debates and role-playing that address real societal conflicts, while also allowing students to actively participate in the school's environmental initiatives (Sandell et al., 2005). Similarly, Mobley et al. (2010) argue that while classic environmental books contribute to shaping environmental behaviour, this influence should not be viewed in isolation. A broader approach is necessary, where reading is complemented by other educational methods and engagement with local environmental issues to effectively apply the ‘abstract knowledge’ gained from books (p. 437).

While all the teachers in this study stressed the importance of outdoor teaching during interviews, their methods remained predominantly indirect. Mehri's and Asli's direct methods, including field trips and school garden lessons, were notable exceptions but not reflective of all teachers’ practices. A discrepancy existed between teachers' stated beliefs and observed practices, especailly related to direct learning. The next section will deal with the barriers that may cause these discrepancies.

9.2.3. Challenges in Environmental Education

Over the decades, research consistently highlights the challenges teachers face in reconciling their beliefs with their practices. Lederman & Zeidler (1986) point out the impact of curricula, limited resources, including inadequate literature, IT equipment, and time, on teachers’ ability to fully align their practices with their educational values. Further exacerbating the issue are standardised assessments, foreign textbooks, and policies like field trip bans (Ajaps & Mbah, 2022), which limit teachers' autonomy and influence their teaching approach. The pressure of large class sizes, restricted class time, and the need to adhere to a fixed syllabus (Ko & Lee, 2003) adds another layer of complexity. Additionally, external factors such as difficult university admission exams and high-stakes assessments (Witoszek, 2018) intensify the conflict between teachers’ beliefs and the practices required by external expectations.

Despite decades of research, these recurring issues continue to challenge teachers’ efforts to integrate their personal beliefs into their teaching practices. A series of challenges were listed by teachers in this study covering overloaded textbooks and curricula, school authority, time, resources and governmental support that led teachers to focus mainly on knowledge transmission through indirect teaching methods limiting the flexibility to accommodate activities and promote environmental behaviour through direct learning.

Complex textbooks and overloaded curriculum were among the most stated challenges by teachers (Zeynab - section 8.3.2., 206, Jamila - section 4.3.3., p. 134, Fariz - section 5.4.2., p. 152). Both Fariz and Jamila stated that the content of the textbooks offered limited opportunities for the students to explore the depth of

environmental problems and critically analyse them (Jamila, section 4.3.3., p. 134, Fariz – section 5.3., p. 149). Highlighting a gap in the curriculum Zeynab emphasised the need for a more integrated and holistic approach that not only covers knowledge about Earth's layers but also addresses human impact on the environment and includes actionable strategies for its protection (Zeynab - section 8.3.2., 206).

Extensive research on this issue (Ashmann & Franzen, 2015; Biström & Lundström, 2020; Chiriac & Iațu, 2023; Cotton, 2006b; N. Evans et al., 2023; Gyberg & Löfgren, 2016; Ko & Lee, 2003; Puk & Stibbards, 2010; Sagdıç & Şahin, 2016; Wepener & Pretorius, 2023) situates these challenges within a broader academic context. Teachers reported limited opportunities to integrate outdoor learning due to their tight schedules, echoing the experiences of Ghanaian teachers who linked heavy syllabi to restricted extracurricular activities, thereby hindering the development of environmental literacy (Takyi et al., 2023). Similarly, content-rich geography subject makes it difficult for Namibian learners to conceptualise geography due to limited access to fieldwork and outdoor learning (Wepener & Pretorius, 2023). As a result, the emphasis shifts toward knowledge transmission, diverting focus from active learning strategies (Ashmann & Franzen, 2015).

Furthermore, the study reinforces the argument that curricula directly shape teaching practices, particularly for novice teachers who rely heavily on them (Grossman & Thompson, 2008). It underscores the need for curriculum developers to integrate teachers' beliefs and practices into the design process to ensure effective implementation (Cotton, 2006a). Related to curricula requirements, time constraints were among the challenges cited by teachers that resulted lack of extracurricular activities and nature engagement that have been extensively discussed in research literature (e.g. Ko & Lee, 2003; Takyi et al., 2023; Wepener & Pretorius, 2023).

Finally, the findings align with and extend Takyi et al.'s (2023) recommendation that curricula alone may not suffice to build environmental literacy. The suggestion to incorporate extracurricular activities—such as leveraging reading, social interactions, and digital tools—provides a nuanced approach to addressing these challenges and integrating environmental education into broader pedagogical practices .

Moreover, national standards (Fariz - section 5.4.2., p. 152) and exam pressure were among the challenges stated by teachers as well (Zeynab, section 8.3.1., 187) which go in line with the research findings by Morrison (2018), Moroye & Ingman (2018) and Gyberg & Löfgren (2016) where these constraints were indicated as challenges to effective environmental education. It has been well stated that, in geography, academic pressure leads to a lack of observational skills which often act as a barrier, making lived experiences inaccessible or preventing them from being fully conscious or meaningful (Wepener & Pretorius, 2023).

Lack of governmental support, financial restrictions and the scarcity of resources were listed as constraining issues as well (Fariz - section 5.4.3., p. 137, Asli - section 7.3.4., p. 205). A study by Tan & Pedretti (2010) identified similar obstacles such as insufficient resources, misalignment between the curriculum and ministry expectations, and the low prioritisation of environmental education in schools which hinder environmental education. Similarly, Stevenson (2007) discussed the conflicting goals between environmental education and traditional schooling, noting that the transformative aims of environmental education often clash with the conservative nature of conventional education systems, leading to inadequate support and resources.

Moreover, Asli (section 7.3.4., p. 189) noted the safety concerns regarding students during field trips among the challenges in arranging outdoor classes, an issue also noted in previous research (Ajaps & Mbah, 2022; Ko & Lee, 2003) and which was exacerbated by the challenges brought on during and in the post-pandemic period and restriction to direct expreinces in all areas, including environmental educaiton (Guerra et al., 2023; Legg, 2023). The time constraints and workload cited by teachers (Fariz - section 5.4.2., p. 152, Zeynab - section 8.3.1., 205), which limit extracurricular and nature-based engagement, also align with broader discussions in the literature (Dyment, 2005; Mirza & Tajuddin, 2020; Wilson, 2012).

Since challenges here are self-reported, teachers mostly focus on external barriers. Internal barriers, such as teachers' content knowledge, pedagogical content knowledge, confidence, competencies, etc. were classified as challenges also (e.g. Dyment, 2005; Mirza & Tajuddin, 2020) that are beyond the scope of my study.

Chapter 10. Limitations

In this section, I will discuss the limitations of the study. The limitations of the study cover sample size, generalizability of findings, time limit, and research area. I have divided the limitations into two categories: expected and emerging.

10.1. Expected limitations

The study had several **expected** limitations due to the nature of the study:

Sample size - the case study is restricted to three schools, which is a limitation because teachers' beliefs can differ in varying contexts. However, that should not underestimate the research project as it thoroughly depicts how teachers' beliefs about the environment have been developed within these three contexts and it can be a starting point to think of what can be done in a way to improve secondary school teachers' environmental thinking.

Due to the limited number of teachers in my study, it was not possible to identify a consistent pattern between teachers' environmental beliefs and their teaching content/ activities based on the available data. Teachers held a diverse range of beliefs about the environment and teaching and given the small sample size and the limited timeframe available to replicate the study in other contexts, I was unable to find out whether teachers' environmental beliefs influence their classroom practices in terms of choice of classroom strategies and methods.

Generalizability of findings - there are limitations related to sample size as the research project focuses on five teachers and population sample as the research focuses on secondary school teachers only. This means research findings cannot be generalised with a small number of secondary school teachers to all teachers due to the nature of the study.

Limitation due to time - During the data collection period, I observed approximately three lessons of each teacher. Not being able to observe a range of all classes, limits my 'non-alignment' findings. For instance, Zeynab stressed the importance of theoretical and practical materials, also noted she had a class a few days ago where students made some models of parks, buildings, etc. but I haven't observed any practical classes of hers which can be considered as non-alignment. Moreover, though I didn't observe role play or field in some teachers, some teachers noted (Jamila and Zeynab) having a role play either before or after the interview I had with them. The arguments and examples I brought from teachers' observed classes and consistency between stated and observed beliefs should not be taken as final findings, instead it should be considered that the study covered only three observations and teachers' beliefs can be extended beyond that three observations.

Researcher's biases - since the researcher is the main instrument within the qualitative study, it is important to acknowledge the researcher's biases and present findings reflectively as there is no other researcher within this study to validate my findings. Moreover, I only explore research subjects' stated beliefs and observe them in the classroom, but how these teachers' environmental thinking developed in real life and how this development influences environmental thinking behaviour within the classroom is out of the scope of my study.

10.2. Emerging limitations

Besides expected limitations, several emerging limitations were observed during the course of the study:

Research area - The area I visited was specifically chosen as the most polluted part of our country and one of the most polluted areas in the world. The area could be roughly divided into three categories: 1) old Black City where no reconstruction has taken place, 2) part of the Black City that was under construction and 3) newly modified part of Black City which has now become White City. Four teachers in my study were from the schools located in Black City and one teacher was from the part that is under construction. I was not able to recruit teachers from the schools in White City as there was only one school and one geography teacher in the Azerbaijani sector who did not take part in this research project. Having several teachers from each part of the region would allow me to see how teachers' beliefs change from the most polluted Black City to the rebuilt White City.

Moreover, the main area of study was the most polluted part of our country. The data of the study conducted out of that area could present opportunities to analyse how teachers' beliefs differ (if they do) across various parts of the country. Besides, all the schools were capital schools, so exploring teachers' beliefs in regional schools would add some different insights to research findings.

In this study, anthropocentrism emerged as the dominant belief system among all the participating teachers. As the research progressed, a key question emerged: is there a connection between teachers' socioeconomic backgrounds and their environmental beliefs? This stems from previous studies suggesting that in less developed countries, teachers' beliefs tend to be more anthropocentric (e.g. Munoz et al., 2009). Considering 'places are environments', geography teachers' perception of the environment as a place is closely related and contributes to their understanding of the human-environment relationship, which implies the interconnectedness between the two (Reid, 2000, p. 337). Given the role of context in shaping beliefs, anthropocentrism may reflect the tension between undervaluing and overvaluing human life. However, it is difficult to draw any conclusion about if teachers' anthropocentric beliefs were triggered by the place they are

currently teaching as the study has not involved teachers living across other parts of Azerbaijan.

Self-reporting - Since challenges here are self-reported, teachers mostly focus on external barriers. Internal barriers, such as teachers' content knowledge, pedagogical content knowledge, confidence, competencies, etc. were classified as challenges also (e.g. Dyment, 2005; Mirza & Tajuddin, 2020) that is beyond the scope of my study.

Shared beliefs: textbooks – In some cases, teachers seemed to have shared beliefs about the environment and teaching about teaching about the environment. For instance, when I wanted to clarify how teachers teach the contested nature of environmental problems, it seemed the question was not clear to teachers. Even if I went on to elaborate on what I mean, it seemed teachers were mainly relying on textbooks to form their subject knowledge and I assumed there is no reference to the contested nature of environmental issues in the textbooks. Though textbooks were discussed to some extent in 9.1.5 as the source of teachers' beliefs, I believe textbooks as the source of subject knowledge need thorough research and I leave it open for further research.

Chapter 11. Conclusion and future implications

In this concluding section of my thesis, I begin by summarising the findings related to my four central research questions. I then reflect on the broader importance of integrating both anthropocentric and ecocentric worldviews, guiding students toward a critical evaluation of these perspectives. Finally, I detail the contributions of my research to the field, outline its practical implications, and identify specific gaps that future studies should address.

Answering four research questions based on my analysis, I concluded the following:

1. **What are secondary school teachers' beliefs about the environment in Azerbaijan?** Teachers predominantly espoused anthropocentric beliefs about the environment, interpreting nature through a human-centered lens that influenced both their stated beliefs and practices. Their views were not strictly binary, instead, they existed along a spectrum. On one end, there was strong anthropocentrism by anchoring, where the environment was viewed almost exclusively as a resource for human benefit. On the other end, there was descriptive anthropocentrism by funnelling, a weaker form that also integrated certain ecocentric beliefs. Moreover, the study indicated that although human-centered views fostered destructive beliefs, they also provided the basis for constructive ones since teachers held the belief that humans possess a constructive ability to preserve the environment. All teachers demonstrated a mutual human–nature relationship, though their beliefs varied between integrationist and separationist perspectives.
2. **In what ways are teachers' beliefs about the environment enacted in their classroom practice?** The espoused beliefs were clearly reflected in the teachers' enacted practices, revealing a complex interplay between theory and application regarding environmental beliefs. In most cases, the enacted beliefs were consistent with the espoused beliefs. However, the reflection of integrationist and separationist beliefs did not emerge during classroom observations.
3. **What are secondary school teachers' beliefs regarding teaching about the environment in Azerbaijan?** The findings were analysed in terms of content - what to teach and teaching approaches - how to teach. Regarding content, teachers believed that knowledge delivery was important while also emphasising the promotion of pro-environmental behaviour. In terms of teaching approaches, all teachers agreed that both direct and indirect methods were important and should be employed.
4. **In what ways are teachers' beliefs regarding teaching about the environment enacted in their classroom practice?** Concerning content, teachers' beliefs generally aligned with their classroom practices, with knowledge delivery being central to their

enacted approaches. Moreover, although all teachers acknowledged the importance of developing environmental behaviour and practical skills, the consistency in practice varied across cases. While the espoused beliefs reflected the importance of direct learning, only some teachers employed direct learning methods in practice.

All teachers shared an anthropocentric belief that the environment primarily exists to serve human needs despite their varied perceptions of the environment encompassing its physical, utilitarian, and protective aspects, as well as concern for all living and non-living entities. Teachers' focus on anthropocentric beliefs may lead to cultivating anthropocentric beliefs in their students as an expected outcome since teachers' beliefs influence students' perceptions and practice (Lederman & Zeidler, 1986) and geography teachers are not exempt from this reality (Reid, 2000).

To avoid this, it has been well articulated for several decades, as well as now that students need to be aware of both viewpoints – anthropocentrism and ecocentrism and be able to think systematically and critically evaluate (Jickling, 1994; Morrison, 2018; Saul, 2000) and to facilitate these teachers need to be able to provide multiple perspectives (Morrison, 2018) that goes beyond presenting these two worldviews, encompassing the range of arguments, ethical considerations, and debates within and between them. Without awareness of the intrinsic value of the environment and our responsibility to protect it, students may lack the moral values necessary for environmental protection:

> I want them to realize that there is a debate going on between a variety of stances, between adherents of an ecocentric worldview and those who adhere to an anthropocentric worldview. I want my children to be able to participate intelligently in that debate. To do so, they will need to be taught that those various positions also constitute logical arguments of greater or less merit, and they will need to be taught to use philosophical techniques to aid their understanding and evaluation of them. They will need to be well-educated to do this. (Jickling, 1994, p. 8)

Despite the criticism of focusing on one environmental perspective, the observation is that teachers are inclined to choose their preferences and determine the perspectives they want to develop in their students without letting much for them become critical thinkers (Jickling, 1994). Concerned with the questions of environmental education within the intersection of education and ethics, Jickling & Wals (2013) propose that 'ethics in the educational context would be less dogmatic and more concerned with using the questions posed as prompts for exploring controversy, dissonance, and unconventional ideas and imagining new possibilities' (p. 71). 'By focusing on the process of inquiry rather than just answers, critical questions allow students to wrestle with contested ideas and develop a deeper understanding of subject matter' (Morrison, 2018, p. 1538). According to Cotton (2006b) while teaching environmental issues, teachers need to a) explore students' personal views, b) lead students to discuss them and c) challenge their ideas. However, even in the practice of teachers who understood

the importance of providing a balanced view of environmental issues rather than imposing their views on students, the complexity of transferring their beliefs into practice was observed (Cotton, 2006a).

Most of the observed classes in this study were lecturing type and more often questions were knowledge-based with less scope aiming to develop students' critical thinking abilities. Exploring student views, role play, practical experiences, exhibitions, project presentations, field trips, and writing essays were part of my respondents' teaching, though not reflected evenly across all five teacher practices. However, in most cases, they covered only the first stage of critical learning: exploring students' views, sometimes going further to discuss them but not giving much attention to challenging their ideas which is a useful tool to let students explore their own beliefs (Cotton, 2006a) and critical for teaching about the environment and environmental issues (Cotton, 2006b).

Research findings of this study indicate that lecturing type and fact-based teaching left little space for the students to critically examine environmental issues. As discussed in Sandell et al.'s (2005) classification of environmental education approaches, fact-based teaching is usually characterised by instilling anthropocentric beliefs, as was the case in this study. However, since critical thinking does not guarantee a true solution to environmental problems, critical thinkers may align with the perspective that makes the most sense to them and this perspective might not always be the 'better' or 'true' position but is often more grounded in cultural thinking: 'Critical thinking does not represent an objective, value-free consideration of positions; critical thinking is necessarily partial and positioned within the cultural view-points of critical thinkers' (Saul, 2000, p. 7). In this regard, evaluating the students' learning in a postgraduate environmental teacher education course, Ballantyne (1995) highlighted the need to further investigate whether environmental educators should actively advocate for specific viewpoints or if students should be guided to understand diverse environmental perspectives and be capable of critically assessing and presenting their own views.

To the best of my knowledge, no research has been conducted to explore teachers' beliefs about the environment within the context of Azerbaijan. This study serves as a starting point for teacher educators and teachers to begin reflecting on these beliefs. It is crucial for teacher educators and teacher training professionals to understand what teachers think, what their beliefs are and if there is a need for them to change their beliefs, if so what changes can be made to teacher training programs since Quinn et al. (2016) question whether we need to shift teachers' beliefs from anthropocentrism towards non-anthropocentrism and further question if it is ethically right 'to challenge, facilitate or shape the development of preservice teachers' worldviews in any predetermined direction' (p. 906). I believe the findings could provide

insights for addressing these questions and develop some ideas about why teachers' beliefs are important, what points should be covered during the training, how changeable teachers' beliefs are, and to what extent teacher development programs can be useful in these terms to support teachers' professional growth and development.

Teachers' shared anthropocentric beliefs, the way some teachers integrated both anthropocentric and ecocentric perspectives, their preference for indirect teaching, and the challenges of direct learning provide a practical view of environmental education that may encourage teachers to critically reflect on their beliefs, recognise their impact on teaching, and consider whether they need to modify their beliefs. Considering anthropocentrism remains a dominant belief system among teachers, they should be exposed to a wider range of perspectives (Gugssa & Aasetre, 2022). But at the same time, we can not avoid anthropocentric thinking as a human being we are obliged to filter all our thinking through anthropocentric ways of thinking (Mylius, 2018). By analysing and clarifying their beliefs, preservice teachers and their educators can reflect on their commitment to specific environmental philosophies and ethics, assess how these beliefs relate to the curriculum, and consider their influence on educational practices (Quinn et al., 2016).

Though my research does not include exploring the content of the curriculum, I think my research findings can also be helpful for curriculum developers to redesign the curriculum (including geography) by considering teachers' beliefs. As highlighted in Section 10.3, one of the primary challenges faced by teachers was the complexity of textbooks, overloaded curricula, and demanding exam requirements. These factors hindered teachers from addressing environmental topics in ways aligned with their personal beliefs, providing students with opportunities for direct engagement with the environment, and incorporating outdoor education into their already busy schedules. Considering, it has been argued that more anthropocentric beliefs are transmitted through indirect experiences while direct experiences foster ecocentric belief through nature engagement (Ajaps & McLellan, 2015; Kil, 2016; Patel & Ehrenzeller, 2023), by giving voice to teachers, it could be effective to consider to what extent our geography school curriculum (as well as within other disciplines) is in line with teachers' beliefs and what could be done to improve the quality of environmental education.

Moreover, research findings can be helpful for researchers who aim to investigate teachers' beliefs about the environment in Azerbaijan. The study can be extended to explore the relationship between the two research questions I explored. My research questions focused on teachers' environmental beliefs/beliefs about teaching about the environment and how they translate/do not translate into their teaching practices. Further analysis would require exploring - whether teachers' *beliefs about the environment* (anthropocentric and ecocentric) influence their teaching (*content* –

knowledge, values, behaviour, skills and *methods* – teaching strategies and activities) about the environment by synthesising the findings from two research questions, identifying patterns and differences across cases. By bringing these individual cases together, in Section 9.1. I argue that teachers primarily held *anthropocentric* beliefs, in Section 10.1 I argue that teachers' focus was on *knowledge* delivery through *indirect* learning experiences. Furthermore, trying to examine the relationship between teachers' environmental beliefs and teaching content and strategies, the initial findings were that one of the teachers with *anthropocentric beliefs accompanied by ecocentric beliefs* (Asli) utilised both *direct and indirect* teaching approaches to deliver not only knowledge but also to build pro-environmental behaviour and developing skills, while teachers with *primarily anthropocentric* views (Jamila and Fariz) referred to only *indirect tea*ching methods with a focus on knowledge delivery. This pattern was not consistent in Mehri's and Zeynab's cases which can be due to the limited number of observations which makes it difficult to draw any conclusion related to the relationship between environmental beliefs and teaching in terms of strategies and activities. This approach aligns with what Sandell et al. (2005) describe as 'fact-based' environmental education. When environmental issues are framed as knowledge-based problems, this perspective emphasises humans as controllers or problem-solvers reflecting a predominantly anthropocentric worldview, where environmental challenges are seen as manageable through research and the dissemination of knowledge to the public. Empiric research findings also indicate that, teachers' prioritisation of knowledge over instilling values, leads to a more instrumental approach to environmental education rather than a transformational one (e.g. Brias-Guinart et al., 2023). Though limited, empirical research findings also indicate that ecologically minded teachers, 'who are not necessarily trained or required to teach about environmental issues but do so based on their values and beliefs' (p. 1527), focus on active learning approaches such as role-playing, project-based learning, essay writing, debates encouraging active participation and critical thinking rather than solely delivering knowledge (Morrison, 2018). Further research would be valuable to examine whether teachers' anthropocentric beliefs influence their preference for knowledge-based education, their choice between direct and indirect teaching methods, and how teachers themselves perceive this relationship. Additionally, it would be important to explore whether, and to what extent, teacher training programs should address these dynamics while taking teachers' beliefs into account.

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Appendix A. Interview Schedule

Theme 1.

1. What does the word ‘environment’ mean to you? If I would ask you to draw a picture of the environment, how could you draw it?
2. Do you think people should care about the environment? Why?

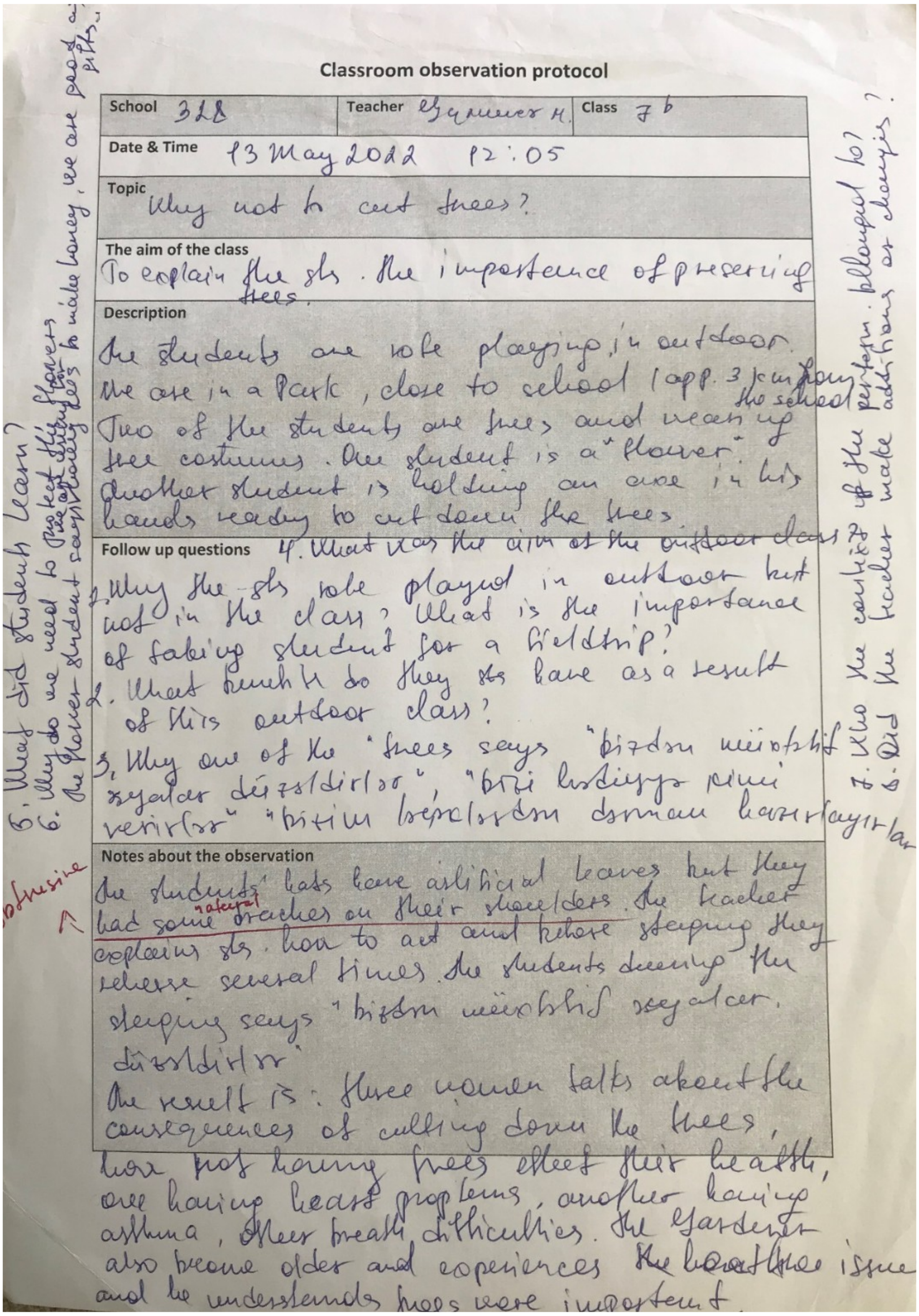
Theme 2. Teachers’ ecocentric/anthropocentric beliefs

3. How would you describe the relationship between humans and nature?
4. Do you think plants and animals have as much right as humans to exist? Or do you think humans are more important than other living beings? Why?
5. Do you think humans have the right to modify the natural environment to suit their needs? Why?
6. Do you think humans are meant to rule over the rest of nature?
7. What do you think about the balance of nature? Do you agree with the idea that the balance of nature is strong enough to cope with the impacts of modern industrial nations or it is delicate and easily upset? Why?
8. Do you think natural resources are finite or can they restore themselves? Do you think humans should learn the ways of developing them? What can be the consequences?
9. Poplar dilemma – imagine you have an old poplar tree near your house, and you find out that your child is allergic to poplar pollen. What would you do?

Theme 3. Teaching environmental issues

10. Do you have any examples of a lesson when you have taught students about the environment? Please could you describe it? (What classroom practices do you use? What are your main teaching methods?)
11. What is the teachers’ role in reducing the negative consequences of environmental problems?
12. What are the factors that inhibit or facilitate your teaching about the environment?

Appendix B. Classroom Observation Protocol



Classroom observation protocol

School 328	Teacher Ezquwer H.	Class 7 b
Date & Time 13 May 2022 12:05		
Topic Why not to cut trees?		
The aim of the class To explain the sts. the importance of preserving trees.		

Description

The students are role playing in outdoor. They are in a park, close to school (app. 3 km from the school). Two of the students are trees and wear up tree costumes. One student is a "flower". Another student is holding an axe in his hands ready to cut down the trees.

Follow up questions ~~4. What was the aim of the outdoor class?~~

1. Why the sts role played in outdoor but not in the class? What is the importance of taking student for a fieldtrip?
2. What benefit do they sts have as a result of this outdoor class?
3. Why one of the trees says "bizdən müxtəlif əşyalar düzəldirlər", "bizi kəsdiyiz kimi verirlər" "bizim köməyimizdən dərman hazırlayırlar"

Notes about the observation

The students' hats have artificial leaves but they had some natural branches on their shoulders. The teacher explains sts. how to act and before stepping they rehearse several times. The students during the stepping says "bizdən müxtəlif əşyalar düzəldirlər"

The result is: three women talks about the consequences of cutting down the trees, how not having trees effect their health, one having heart problems, another having asthma, other breath difficulties. The gardener also become older and experiences the heart issue and he understands trees were important.

Margin notes:

6. What did students learn?
6. Why do we need to protect the flowers? The flower student says we are good for to make honey, we are good at pills...
7. Who the costume of the perform. belonged to?
8. Did the teacher make additions or changes?

intrusive

The students were tired after numerous rehersal.
Ətraf mühitimizi qoruyaq ki, xəstələnməyək.
↓
The teacher added it.

Siz ətrafı necə qoruyursunuz? Niyə?

Note: The whole point of the role play seemed to ~~be~~ reflect anthropocentric views:

1. People make use of trees
2. People make use of flowers
3. Three women & gardener talks how cutting down the trees affected their health (main point of the performance)
4. We have to protect the environment to avoid getting ill.

Appendix C. Content of teaching: knowledge, behaviour and practical skills

Teacher	The content of teaching: - knowledge, practical skills, behaviour	Example	
		Stated	Observed
Jamila	knowledge	**knowledge:** We need to protect the environment for future generations. It is our historical heritage. There are threatened species, we may see them only in Red List. Or there is an extinction risk of thousands of species. We have to protect them… Can you imagine what can happen if so many species become extinct? Imagine the world without this species, it would be empty… How can it be? It is like a man without clothes… (BI, p. 11) **behaviour** – 'Do not Litter' campaign by Jamila	**knowledge**: We need to establish more parks and expand green spaces, as they will absorb pollutants and provide us with oxygen' (CO2, p. 8). **behaviour**: Have you ever collected maklatura[1] at primary school? Old books, notebooks… Do you know why they are being collected? They are recycled and made into new books and textbooks… we wouldn't need to cut down the trees if we used more recycled papers… (CO1, p. 3)
Fariz	knowledge	**Knowledge:** It would be better if we started teaching geography from where we live. First, we start with the terrain, then the characteristics of the climate, then internal waters like rivers, lakes, groundwater, etc., and then related to that, the biosphere. For instance, I look at where I live: Is it flat or rough? What is the climate like? Looking at its characteristics, we see it is dry. If it's dry, then we think animal life will be scarce… (BI, p. 12-13)	**knowledge**: S1: Another reason for water pollution is crude oil... T: Do we have this problem? S2: Yes T. Where? S3. Caspian shores T. Which parts of the Caspian coast are polluted on our side? The Absheron coast... There isn't much on the southern side, and there isn't much on the northern side either. Most of the pollution is along the Absheron coast… What about other than the Caspian? S4. The Black Sea, the Mediterranean Sea... T. There is pollution along the Black Sea and Mediterranean coasts as well... S5. The Gulf of Mexico... T. One of the most polluted places is the Gulf of Mexico. It could be the Caribbean Sea, or the Gulf of Guinea on the west coast of Africa. The Persian Gulf is in first place. There's also the North Sea… (CO1, p. 1-2)
Mehri	Knowledge/behaviour/ practical skills	**knowledge**: It is well known that geography is part of the natural sciences. Since it is included in the natural sciences, our work is directly related to nature. Mountains, valleys, plains, elevations, lowlands, plateaus, natural zones, vegetation, and wildlife are all part of our field of expertise. That's why we try to teach topics in line with the subject we	**knowledge**: T. We know that forests are a source of oxygen. Which forests are often referred to as the lungs of our planet? S1. The Amazon forests T. Where are they located? S2. In Brazil

[1] Maklatura is a Russian word for waste paper

		cover… (BI, p. 12) **behaviour**: We try to establish a direct connection with nature following the themes we learn. We celebrate the arrival of spring, observe the germination of plants… we collect diverse soil samples, study their composition, learn how to prevent their pollution, emphasise the importance of responsible waste disposal and actively participate in litter collection… (Mehri, BI3, p. 12)	T. On which continent is Brazil located? S3. South America T. What is the highest peak in South America? S4. And mountains (CO3, p.6) **behaviour**: T. How do you protect the environment and when do you think you might pollute it? S1. we don't throw away rubbish T. You participated in some activities, what was that? What did you collect? S2. Books T. What did you do with them? S2. Recycled papers T. And what do you do? S3. Made new items from the waste (CO3, p. 6) (also sections 6.3.1. and 6.3.3.) **Practical skills** – students made pencil cases of plastic bottles and made nests for birds (See section 6.3.3 for details)
Asli	Knowledge /behaviour/practical skills	**knowledge+behaviour:** I think instead of just telling students not to litter, we should show them the consequences it can have on their lives. But we need to do it thoroughly, explain what kind of impact it will have on them. If we could even demonstrate it in some way, like through a small role-play, they might start thinking more about how it harms them. If they understand the damage, we'll see a bigger impact (BI, p.16)	**knowledge** T. How do you think the environment influences living entities? S1. Living beings that are used to live in cold (areas) can die in hot (areas) T. True, what else? S2. Smokes from the factories influence both humans and animals. T. That's the deterioration of ecological balance. S3. Fish live in water, if we take them out of water, they will die. T. if they change their environment they can't survive. (CO1, p. 1) **knowledge+behaviour:** T: What can we do to protect the hydrosphere? S1: We should not toss waste into the water. We should use recyclable means T: Yes, recycling – have you heard about recycling? There used to be just one bin for everything, now there are several ones according to the waste type. Why are they separated? S2: For recycling. T: What is the difference between fruit seeds and a container of water? S3: Plastic will remain for five years. T: Even iron undergoes erosion. But plastics don't, as they are not exposed to water (CO2, p. 5)

			practical skills – students planted trees in the park (See section 7.3.3 for additional details)
Zeynab	knowledge/behaviour	**knowledge**: First. we cover the theory part, like how the environment has become polluted, the damage humans have caused to all four layers. We teach the theoretical part, then show videos if we have any, show pictures, and also try to demonstrate it in real life. We cover the theoretical part, explain it, and they understand, so they have the information. After that, it's necessary to organise a real-life excursion to explain everything to them in more detail (BI, p. 17-18) **knowledge+behaviour:** It's important to guide kids in the right way and instill these values in them... It shouldn't just be words. We read in books that you shouldn't litter, but we need to explain why. Not just say it, but explain why you shouldn't throw plastic on the ground because it doesn't disappear, it stays there. If it's something natural, like a leaf, it will eventually decompose and mix with the soil. But if we throw plastic, it will still be there 1,000 years later. If everyone throws plastic, the soil will be ruined. The soil needs to regenerate, and plastic doesn't help with that. So it's not enough to just teach the rules, we need to show the reasons and explain the consequences (BI, p. 22-23)	**knowledge:** T: What is recycling, students? Plastic materials, when thrown into nature, do not undergo the erosion process. From chemistry, you know what erosion is. When substances that absorb water undergo erosion and merge with soil. Substances that do not absorb water don't undergo erosion and stay the way they are; they don't get destroyed. It is the same with plastics; as they don't absorb water, they will stay in nature. Just imagine the amount of plastic if each person throws away a plastic item. Can you imagine? Can you compare? We should avoid using plastics (CO3, p. 8-9). **behaviour**: T: What should we do to prevent pollution? How should we protect the environment? S1: We need to dispose of waste correctly. S2: We need to prevent smoke from factories and plants. T: Have you heard about cleaning devices? Cleaning devices should be installed to clean polluted water before transferring it to water reservoirs. But why do we need to protect it? Just for drinking water? Just for people? S1: For living beings S2: For animals living in water S3: Both for living beings and for trees, plants, mushrooms. T: Then, when we say protection, we don't mean just people. We mean all living beings, microorganisms (CO3, p. 2-3)