Out of School Support for Gifted and Talented Learners: An Exploration of Online Discussion Forums

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Thesis submitted to the University of Oxford for the Degree of DPhil

St. Cross College
Hilary Term 2009

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ਜਿਸ ਕਾ ਕਾਰਜੁ ਤਿਨ ਹੀ ਕੀਆ ਮਾਣਸੁ ਕਿਆ ਵੇਚਾਰਾ ਰਾਮ ॥

Jis ka kaaraj tin hee kiaa mannas kea vaechara ram ||

The One who owned the endeavour has completed it;

what can the mortal do alone?

Guru Arjan Dev, *Sri Guru Granth Sahib*:783

This thesis is dedicated to the memory of my beloved Master

Abstract

This thesis explored the potential of engaging gifted and talented learners in an online community of inquiry promoted by the use of asynchronous discussion forums. It employed a mixed-method, case-study approach where non-participant observation of online interactions and focus group meetings with the tutors contributed to the qualitative analysis of how the members realised participation in the forums. Quantitative analysis of membership data and online questionnaire responses revealed member characteristics of the sample members and patterns of active (vocal and silent) participation. Analysis was inductive and interpretive, informed by an original synthesis of the theoretical perspectives of two theories: the online learning theory suggested by Garrison, Anderson and Archer (2000); and the cognitive and affective domains for learning skills, proposed by Bloom *et al.* (1956) and Krathwohl *et al.* (1964).

Content analysis of over 3000 messages posted or read by approximately 4500 members revealed community-based and ability-based characteristics that enabled the group to deal with social stigma, co-construct knowledge and promote meta- learning skills.

The study concluded that participation in online discussion forums held the potential to address several of the needs identified by research for gifted learners: The need for the company of like-minded and similar ability peers; the need to develop higher order thinking skills; and the need to become independent learners. In this online network, the gifted learners could receive communal support from other members and tutors who acted as 'mentors' and role models for honing interpersonal and thinking skills such that they were motivated to pursue their interests to their full potential.

Acknowledgements

I would like to express my gratitude to a number of people without whom this research would not have been possible. Foremost, I am grateful to both of my supervisors. John Furlong has been an inspirational teacher throughout the five years I have known him. He helped shape both my methodological and analytical thinking with his phlegmatic and supportive attitude. Viv Ellis had the remarkable quality of making me feel comfortable and relaxed and keeping me motivated throughout the process. His guidance and close scrutiny of my work helped me to stay focused and complete this thesis. My heartfelt thanks go to him.

I am indebted to the gifted and talented learners, the facilitators of the forums and the research team at the National Academy of Talented and Gifted Youth, who were vital to the execution of this study. They welcomed me into their community, engaged my queries and ideas and provided valuable insight on all the topics of this thesis. I am particularly grateful to Laura Mazolli, Ruth Hewston and Rosalind Roberts for their support.

This research would not have been possible without the scholarship provided by the University of Oxford. Special thanks to Professor Geoffrey Walford for his guidance to get this funding.

Many friends have offered advice, given me books and articles, read and edited chapters of this work or just sat with me and talked about this project, encouraging rigour and creativity. These people include: Elena Soucacou, Amar Dhand, Nick Hopwood, Russell Francis, Shalni Gulati, Allison O' Mara, Professor Richard Pring, Dr Geoffrey Hayward and Sue Cope. Thank you all so very much for all your time and effort.

Many, many thanks to all of my family for their love, patience and unflinching support throughout these years. Thank you Rik and Amit for all your generous help. Finally, deepest gratitude to my partner, my best friend who has given me inner strength to make this journey a time for cultivating solitude, concentration, faith, love for my spiritual mentors and teaching me to celebrate life at each step.

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CHAPTER 1

Introduction: Setting the Context

1.1 Chapter overview

This chapter introduces the study by articulating the personal motivation, rationale, methodology, terminology and structure of the thesis. The personal motivation section describes my particular life experiences and research interests with gifted and talented learners. The rationale section attempts to show the importance of the study by justifying the topic, method and context in relation to the current status of research. The terminology section indicates the chosen definitions of various terms, such as 'gifted and talented', which are used throughout this thesis. Lastly, the section on the structure of the thesis describes the organisational structure of this document.

1.2 Personal motivation

My interest in gifted and talented education began at a Canadian high school. At the suggestion of the school principal I took some courses to qualify for teaching gifted and talented learners. He wanted to introduce a TAG (Talented and Gifted) programme at our school and wanted to enlist my help in teaching and conceptualising this project. I was delighted to have been chosen and have become increasingly involved with this aspect of school provision ever since. Teaching in three different countries and being exposed to the varied awareness of and provision (sometimes very minimal) for the needs of the gifted, I visualised the use of technology as one of the possible answers/ways to tackle these concerns.

I began this research process with a mixed-method exploratory study (Kaur, 2004) as my MSc dissertation. The main aim of the MSc study was to find out how gifted students perceived ICT (Information and Communication Technologies) and to

what extent it was being used to meet their individual needs in school. Another underlying purpose of the MSc study was to familiarise myself with difficulties that might arise from data-collection strategies and analytical procedures so that they could be refined substantially for a future DPhil study in a related area.

A non-probability, convenience sample from two schools from the Oxfordshire area (59 secondary school students aged 13-15) was surveyed. The classes involved were both top sets and comprised mainly of those students who had been identified as being gifted and talented by the school. The findings indicated that while the students felt empowered and motivated when allowed to work on computers at school, they did not go into any depth in their tasks and tended to waste their time. The fundamental concerns were that the time constraints of lessons, lack of challenge and lack of proper teacher direction and technical support often left them feeling frustrated. This led to a lackadaisical approach towards school work by many of these students, often leading to poor behaviour and a low standard of work while at school. They preferred to work at home on their own computers which allowed them the flexibility of going into as much depth as their interest in the topic demanded. They were more familiar with the capabilities of their home computers than the school ones and were able to get access to resources without excessive firewalls. At home, the only things that prevented them from working as much as they wanted were the time constraints that they either set themselves or were set by their parents. A lot of learning appeared to be taking place at home and I wanted to explore this venue further.

The missing factor I felt at this point was that even though these gifted students were quite motivated, self-directed and willing to work on their own, they still needed some direction and structure for any sort of productive learning to take

place. It was found that these students felt overwhelmed with the amount of information available and often drowned themselves in it as they lacked the skills to sift through this information. While it was not within the scope of the study to generalise to all schools, it became apparent that in the comprehensive schools where I conducted my study, the varying needs of gifted and talented students were not being adequately met.

In light of this finding - that often the needs of gifted and talented learners are not met at school - what might be a way of supporting these gifted and talented learners to learn from home? One of the routes available to parents of gifted children who realise these shortcomings is to educate them at home themselves. Home schooling, however, is only an option for those families who can afford the luxury of the time of a parent dedicated to the cause and have the discretionary income for them to stay at home. International virtual schools for the gifted also offer a solution for frustrated parents. It was while visiting the websites for virtual schools that I discovered that they had message boards where the gifted could come for support and discussions. In England, while most of the organisations for gifted and talented offered support for both parents and educators, it was only the National Academy of Gifted and Talented Youth (NAGTY) and the London Gifted & Talented (LG&T) that also offered online discussion forums and courses. I wanted to explore how the gifted and talented learners were making use of the online space created by the discussion forums.

I started to focus on the literature related to discussion forums and while most of it was aimed at higher education, I began to visualise the hidden potential these forums held for learning and teaching all students, especially self-motivated gifted and talented learners. The question that then arose in my mind was how and if

participation in the online community for gifted and talented learners could potentially support some of the needs that had been identified during the literature review. For example, was it possible that by participating in these forums the gifted learners could learn interpersonal and communication skills? Was it possible that the discussions were such that they could help the gifted learners think critically by providing them with the challenge they required?

1.3 Rationale

The controversy about whether gifted students are more likely to have emotional and social difficulties than their non-gifted peers has prevailed for decades and can be traced back to Hollingworth (1942) and Terman (1925). While Hollingworth's research suggested that children with exceptionally high IQs (over 160) tend to experience difficulties in making both educational and social adjustments, Terman concluded from his longitudinal study that gifted children with IQs over 140 tend to be better adjusted than their non-gifted peers. According to Freeman (1998) there is 'no reliable scientific evidence to show that exceptionally high ability *per se* is associated with emotional problems or that an inadequate education results in delinquent or disturbed behaviour' (p.7). Freeman suggests that most of the research that implies that gifted learners have emotional problems comes from clinical settings and case studies where the population is self-selecting and no comparisons are ever made with other equally able children. She further contests any link between anti-social behaviours and lack of proper educational challenge and brings to attention other researchers who claim that problematic behaviours for gifted learners usually arise from dysfunctional family backgrounds; just as they would for any non-gifted children. In fact, some studies of the gifted have found them to be emotionally stronger than others, with higher productivity, higher motivation and

drive, lower levels of anxiety, overall positive self-concepts and self-esteem (Van Boxtel and Monks, 1992; Campbell *et al.* 2006; Marsh, 1987). A review of the literature on the relation between giftedness and self-concept (Feldhusen and Kolloff, 1981) concluded that successful gifted learners in general have a more positive self-concept than normally intelligent youth. Feldhusen (1986) considers a positive self-concept to be a dynamic and driving force in the actualisation of giftedness. On the other hand Hoge and Renzulli (1993) argue that self-concept in the gifted child might be more negative than in less gifted peers. They give the following three reasons. It is possible that the high expectations communicated through the labelling process would contribute to feelings of failure (Buescher, 1991 as cited in Hoge and Renzulli, 1993). Since the exceptional child is usually cognitively advanced, he or she may be more sensitive to social cues and more analytic about them which, in turn, might lead to a more critical attitude towards performance (Freeman, 1985 as cited in Hoge and Renzulli, 1993). If the exceptional child is placed in a homogeneous group of other exceptional children it could lead to a decline in self-esteem (Coleman and Fults, 1982; Harter, 1986; Marsh, 1990 all as cited in Hoge and Renzulli, 1993)

Whilst there appears to be little consensus and a lack of generalisable findings about the innate characteristics of gifted students, there is evidence of risk factors which can contribute to psychosocial maladjustment among this group. For example pressure from teachers and parents to always perform well may lead to negative emotional consequences; feelings and fear of failure and of disappointing others' expectations may develop.

> There seems to be a long history of findings showing that modestly gifted students show enhanced social functioning. However, a significant minority of very high-IQ children appear to experience social difficulties, showing less favourable social self-concepts than modestly gifted students.
>
> Van Boxtel and Monks, 1992:5

Peterson and Colangelo (1996) and Reis and McCoach (2000) claim that increasingly educators are becoming aware that gifted learners are an 'at risk' group and are not 'advantaged' as was the common belief previously. Some argue that they are as much at risk of underachieving as any other disadvantaged group. A recent study by Schofield and Hotulainen (2004) found evidence to show that underachieving gifted children are more likely to drop out than normal children. According to Colangelo (2002) 'underachievement in schools by gifted students is a manifestation of a combination of social-psychological tensions' (p.2). He makes the following observations based on a synthesis of research over the past three decades and as well as his own work: depression, anxiety and isolation are among the common difficulties with gifted students; teenage years are the most difficult socially for gifted students; to be a gifted minority student is an added social challenge but meeting the cognitive needs of gifted students often simultaneously meets their social-emotional needs. These views are upheld by other researchers like Gross (1993) and Silverman (1993).

All gifted children are not affected by their special abilities in the same way. They interact with and are influenced by their families, their education, their relationships and their personal development. Thus, any community that caters for the educational needs of gifted and talented students will also need to consider their social and emotional needs. With peer relations becoming increasingly important, and peer interactions contributing to the maintenance and enhancement of self-esteem, adolescence is likely to be a particularly vulnerable period for these gifted students, as it is for all adolescents. In one sense this is no different from one's concerns with providing appropriate emotional support for any group of learners but with this particular group the character of support might well be different.

Participation in an online community of inquiry among gifted learners may represent an important process of support and survival for those participants who might be experiencing some difficulties. On the other hand, for those participants who already have higher productivity and motivational levels it may simply be a place to enhance their interests and encourage their growth; their participation would become the foundation of such a community by helping it to flourish. My hope was that the exploration of the processes and practices of this phenomenon (online community) might enable a greater understanding of this population and its actions, and might reveal avenues for more effective and informed interventions based on observed patterns.

As the literature review will demonstrate, educational research on giftedness has mostly focused on strategies for meeting the varied needs of gifted and talented learners within formal institutional settings, while the possibility of meeting their needs in informal contexts lacks attention. Literature on conceptualising technology as an online pedagogy to enhance the chances of gifted learners meeting their full potential is almost non-existent, and most accounts are isolated, inexplicit and lack in-depth exploration of the topic. A case study that examines the online interactions of a gifted community would, therefore, be a contribution to the literature. Such an inquiry has important implications for guiding policy about how to organise online communities within which meaningful educational experiences can be promoted. Identifying patterns in informal spaces offers contrasting insight to data and theories of learning within schools, and aids in the construction of gifted education programmes that presumably rely on such patterns.

This research's significance relates to its place in our understanding of gifted learners' use of ICT in the form of online discussion forums – a largely under-

researched and poorly understood area. The study was undertaken to provide rich descriptive data of the nature of participation in a gifted community of inquiry with the hope that it can contribute further information about the potential of the online community to meet some of the needs of gifted and talented learners. It was anticipated that by shedding light on the types of communicative and cognitive skills that are demonstrated in such an environment during students' engagement in the online exchanges, it might be possible to understand how gifted learners establish relationships with others and how they co-construct knowledge.

1.4 Methodology

The methodology selected for this inquiry was a case study. This approach was considered to be most suitable for a study that required gaining access to an 'invisible' population and generating data pertaining to learning online for gifted students.

The analysis was interpretive and inductive in character with primary reliance on two models of learning as theoretical lenses to 'tease out' patterns. First, the conceptual model of online learning as a 'Community of Inquiry' by Garrison *et al.* (2000). This model was chosen for its ability to provide insight on interactional and community-level dynamics (Barton and Tusting, 2005). The model suggests that if adequate levels of three types of elements are present (social presence, cognitive presence and teacher presence) then deep and meaningful learning can occur. These core elements were congruent with what I wanted to investigate: the emotional, conceptual and pedagogical dimensions of participation in the online community by gifted learners.

The second model was the cognitive domain of the taxonomy of educational objectives by Bloom *et al.* (1956) and the affective domain developed by Krathwohl *et al.* (1964). The model includes six levels of thinking skills in the cognitive domain: knowledge, comprehension, application, analysis, synthesis and evaluation and five levels of emotional skills in the affective domain: receiving, responding, valuing, organisation and internalisation of values. The skills are in a hierarchical order in which the previous levels are subsets of the new level. The taxonomy takes on renewed importance in the information or knowledge age by providing a cognitive lens with which it might be possible to recognise where computer technology can and cannot reach. Together with the community of inquiry model it offered a way in which levels of thinking could be identified in the dialogic texts produced by the students.

The setting and participants selected for this study were members of the online community of gifted and talented students from NAGTY. This context was selected primarily because it had a membership of gifted and talented students from all over England aged 11-19. Such a dense, nationally based community structure provided fertile ground for a diversity of socially constructed learning patterns to be observed in everyday online interactions over a period of one year. I was extremely fortunate to gain access to this community as it permitted this research to be the first one of its kind, both nationally and internationally; a qualitative study of a large online community of gifted and talented learners.

This specific group captured my interest when I visited the NAGTY headquarters in 2004. The academy was still in its embryonic stages and the possibility of understanding the educational potential of an online gifted community was a powerful motivator. At the time I envisioned the possibility of creating

communities of inquiry as an online pedagogy, which would have strong reliance on networks of like-minded gifted learners to provide a stimulating and informative educational environment.

1.5 Terminology

In the 'gifted and talented' research literature, 'high ability', 'more able', 'able', 'bright', 'gifted' and 'talented' are just some of the terms which have been used to describe high achievers. These terms may be further modified with adverbs: moderately gifted, very gifted, highly gifted, profoundly gifted, exceptionally gifted, twice exceptionally gifted, etc. suggesting the possibility of precise identification along a single spectrum of abilities, usually IQ. 'Ability' is seen as a particular gift for doing something well or a high degree of intelligence or competence. This view is grounded in intelligence testing, reliant on a notion of fixed ability or inherent ability. However, sometimes labels such as 'more able' or 'less able' are used for comparison of attainment or performances. They are used principally to aid differentiation and do not predict potential (Hart *et al.* 2004). This is discussed further on p.41-56.

Since most of the studies referred to in this research had different criteria for the gifted and talented sample used, it was not possible to make any clear distinctions between the terms. Therefore, in this study, terms like 'gifted and talented ', 'gifted', 'gifted learners', 'able' or 'very able' were regarded as being synonymous and were used interchangeably. However, to remain consistent with the definition adopted by most schools in the UK, in this study, students were considered 'gifted' if they were in the top 5-10 per cent of the school population in academic subjects and 'talented' if they had exceptional ability in subjects such as music, art or sport (these definitions were proposed by the government initiative, Excellence in Cities (EiC) in 2003 (see

p. 68-69). However, the members of the research gifted community (NAGTY) were from the top national 5 per cent.

My own conception of 'gifted and talented' is more aligned with the differentiated model of giftedness and talent (Gagné, 1997) discussed on p.38-46. Gagné's definition reflects on the distinction between ability (giftedness) and performance (talent). It acknowledges the importance of innate ability and also recognises the significant influence of environmental (surroundings, persons, events, activities) and other intrapersonal factors (motivation, personality) on the development of ability into talent. Aptitudes may range across different areas, such as intellectual, artistic, creative, physical and social, or be limited to just one or two. But whatever the potential, it can only develop into exceptionally high achievement in circumstances which are rich in the appropriate material and psychological learning opportunities.

1.6 Structure

This thesis follows the structure of a qualitative study. It begins with sections to 'situate' the reader in the topic, methods and context. The next three chapters (2, 3 and 4) present literature reviews. Chapter 2 is split into two parts. The first part positions the study in current literature on gifted and talented learners discussing: the nature of giftedness, characteristics of gifted learners, identification procedures, needs and some of the strategies being used to meet these need.. The second part gives an account of the events that have influenced the current policies and provision for gifted and talented learners in England and discusses the definitions and the English model of gifted education.

One of the ways research suggests for meeting the needs of gifted learners is e-learning. Chapter 3 develops a connection between e-learning (in the form of

asynchronous discussion forums in an online community of inquiry) and gifted learners. Keeping in mind the overarching question for this study – whether discussion forums have the potential to support the needs of gifted learners in an online community of inquiry – this chapter discusses the characteristics of gifted and talented learners which resonate with the properties of asynchronous computer-mediated communication. Chapter 4 then outlines the development of a theoretical framework which facilitated the analysis and interpretation of the data. It describes what a community of inquiry is and then explains how the Community of inquiry model (Garrison *et al.* 2000) was integrated with the cognitive domain of Bloom *et al.*'s (1956) and the affective domain of Krathwohl *et al.*'s (1964) taxonomy of educational objectives. It then describes the resulting new conceptual tools to explore participation: the relational dimension, the conceptual dimension and the pedagogical dimension.

The next two chapters (5 and 6) are related to the methodological approaches used in this study. Chapter 5 describes the setting and participants, providing both broad and more intimate contextual details by discussing the research questions, the research design, the research sample, the research site and the research community. Chapter 6 outlines the data-generation procedures, the analytical techniques, trustworthiness and ethical considerations that were employed in this research.

Chapters 7 and 8 are devoted to addressing the research questions and articulating the data analysis and findings of this study. In order to establish an understanding of the general background of the community and its members,
Chapter 7 begins by describing how the discussion forums operated, followed by descriptive characteristics of the members such as age, gender, socio-economic status. It then examines the members' perceptions of active participation and

engagement within the forums using both quantitative and qualitative data that were generated by secondary data, an online questionnaire, case studies and logging patterns of various active participants.

Chapter 8 also presents and discusses the findings of this study in light of qualitative and quantitative data emerging from three different sources (content analysis of text messages, an online questionnaire, focus group meetings with the tutors). The subsidiary questions that were asked to help in the investigation of the potential of online discussion forums in developing a community of inquiry were how participation was realised in the community of inquiry (operational research question 1) and how the online interactions facilitated higher thinking skills (operational research question 2). This is done in three stages: the relational dimension which represents the social aspect of relationships in the community; the conceptual dimension which focuses on the cognitive nature of the exchanges; and the pedagogical dimension which examines online pedagogy.

Finally, the thesis concludes with Chapter 9 which gathers salient points from the findings, extrapolates concepts and provides suggestions for further research and practice.

CHAPTER 2

Gifted and Talented Learners

2.1 Chapter overview

There are two main aims of this chapter. The first is to place the present study within the existing literature for gifted and talented learners. This is done in Part 1. Since there are differences of opinion on how to define 'gifted' and 'talented' learners, how to identify them, what their needs are and what the best strategies are to meet them, the chapter is written as a series of contestations. This part begins by examining who the gifted learners are ('Definitions and conceptions'), the origins of 'giftedness' and the differences between 'gifted' and 'talented' learners. Next, some of the main characteristics of gifted and talented learners are presented together with the strategies used to identify these learners, followed by a discussion of the ongoing debate about whether such a thing as giftedness exists. The following section then discusses some of the needs of gifted and talented and how they might be addressed. In part 2 an account is presented of the events that have influenced the current policies and provision for the gifted and talented learners in England by discussing the government initiatives that have paved the way, the definitions in use and the English model of gifted education. This is then followed by some general concerns or criticisms about the English model.

Part 1

2.2 Existing research on gifted learners

In trying to answer questions about who the gifted learners are and how one identifies them, existing research has revealed two perennial problems which exist within the field of gifted education: finding a universal definition for 'giftedness' and finding adequate identification techniques. Any definition of giftedness is intricately related to identification. The many different views of the first affect the second,

leading to more and more complex views of giftedness and leaving it too flexible a construct. Both objective measures, like Scholastic Aptitude Tests, and subjective measures, such as teacher assessment, are being used to identify gifted learners: There is no universal agreement (Cropley *et al.* 1986; Shaughnessy, 1990). According to Davis and Rimm 'there probably are as many different strategies and policies for identifying gifted and talented students as there are programmes' p. 68.

Throughout the last century, considerable progress has been made in the field of education for gifted learners but it is still difficult for many to come to terms with the idea that learners with exceptional abilities also require special attention. Just as a child of less-than-average ability frequently has trouble keeping up with his or her classmates, a child of above-average ability also has trouble staying behind with them. Both have special types of needs. While some attitude surveys express a profound conviction that not only is it necessary to provide adequate services for gifted learners but fundamental to their well being, others show an inclination towards the belief that gifted children can make it on their own because of their above-average ability.

The wide array of views from one end of the spectrum to the other is held not only by politicians, but by educators, administrators, teachers and teacher-training agencies and even the general public (Bégin and Gagné,1994; Schwartz, 1994; Street, 2001; Strom *et al.*1994).

2.3 Definitions and conceptions of giftedness

This section examines two issues: first, the origins of the concept of giftedness by giving a brief historical context and the evolving definitions of what it means to be gifted and talented (Section 2.3.1); and second, arguments

are presented from both sides of the ongoing debate about whether such a thing as giftedness exists (Section 2.3.2).

2.3.1 Origins of the concept of giftedness

Empirical studies in the early 1920s and 1930s by pioneers such as Lewis Terman and Leta Hollingworth brought scientific credibility to the field of gifted education. The first widely published research studies on giftedness evolved from research on intellectual ability being inherited, children with varying ability, construction of instruments to measure differences in intellect and the realisation that children had different needs.

The term 'gifted child' was coined by Terman and his colleagues who developed the first version of the Stanford-Binet Intelligence Scale in 1916. This scale was a direct descendent of the Binet-Simon Scale, the first intelligence scale created in 1905 by psychologist Alfred Binet and Dr Theophilus Simon, who were asked by the French Ministry of Public Instruction to develop a method for identifying students who could not conform to formal education.

Instead of converting a person's performance into a mental age, the Stanford-Binet converted it into a single score, the intelligence quotient (IQ), which provided an easier basis for comparison. The Stanford-Binet Scale tests intelligence across four areas: verbal reasoning, quantitative reasoning, abstract/visual reasoning and short-term memory and measures. Until the late 1960s, the benchmark score of 130 was the marker used by school psychologists to draw the boundaries between gifted and 'non-gifted' children, as shown in Table 1.

IQ score	Considered to be
100	Average
110	Top 25% of the population
120	Top 7% of the population
130	Top 2% of the population
>130	Genius

Table 1: IQ scores on the Stanford-Binet Test in the 1960s

Gradually, the emphasis shifted from the general intelligence measured by the Stanford-Binet Intelligence Test to the idea of multiple intelligences. Several studies and authors are now in favour of a multi-dimensional view of giftedness (Davies, 2001; Eyre, 1997; Freeman, 1998; Gallagher and Gallagher, 1994; Imbeau, 1999; Kerry, 1978; Van Tassel-Baska, 2000; White *et al.* 2003, Whybra, 1992). It is suggested that a high IQ is no longer sufficient as a definition of a child being gifted or talented, but that it must be accompanied by various other traits such as task commitment, creativity, sense of enjoyment, etc. In addition, these traits or characteristics must be nurtured under the right conditions. The environment in which a gifted child is born and other social factors have a huge impact on whether or not these traits will be manifested to their full potential (Gagné,1997; Monks, 1992 as cited in Dyson, 2003). Terman, in later studies, also found that many other factors are integral to a more complete picture of a child's ability.

Since Terman's pioneering work, the field of giftedness has been steadily changing. Researchers in many countries have been instrumental in furthering its cause over the past century and now successful programmes for gifted learners are in place. However there has also been a lot of controversy about the existence of giftedness and the necessity to have any special provision for 'gifted and talented' learners. In the next two sections, some of the broader concepts and definitions are given followed by a synopsis of the ongoing debate about the existence of giftedness.

2.3.2 Definitions and conceptions of giftedness

'Giftedness', 'intelligence' and 'talent' are fluid concepts and may be seen differently in different contexts and cultures. The elusive nature of the concept of giftedness is illustrated by the fact that there are over 200 definitions of 'giftedness' and associated terms such as 'gifted', 'talented', 'more able' or 'exceptional' (George, 1992). Some of the broader concepts and definitions of 'gifted' and talented' that have paved the way to the present ideas of giftedness are presented below.

The Marland Report

The definition proposed in the well-known Marland Report (1972) has been adopted in its entirety or in part by numerous education systems in the United States and elsewhere. By including a wide variety of abilities, the Marland Report's definition of giftedness has helped to defuse criticisms that the selection of gifted children is elitist. The Marland Report to Congress, which has been modified several times, stipulates that:

> Gifted and talented children are those identified by professionally qualified persons who by virtue of outstanding abilities, are capable of high performance. These are children who require differentiated educational programmes and/or services beyond those normally provided by the regular school program in order to realize their contribution to self and society. (p.IX)

The report offers six criteria for giftedness (general intellectual ability, specific academic aptitude, creative or productive thinking, leadership ability, visual or performing arts and psychomotor ability) and discusses not only 'demonstrated achievement' in any of the six areas but also 'potential ability' in any of them. It does not however explain why they should be grouped together and concepts such as 'creative thinking', 'psychomotor ability' and 'leadership ability' are too vague and difficult to measure. Furthermore, the definition does not include 'motivation' or

'task commitment' as an element of giftedness. The report's concept of giftedness applied to a minimum of 3-5 per cent of the school population. Although many states in the US used this definition or a version of it, even within a school, you might find a range of personal beliefs about the word 'gifted' which has become a term with multiple meanings and much nuance.

Renzulli's Three-Ring Conception of Giftedness

Professor Joseph Renzulli, from the National Research Center on Gifted and Talented, developed 'The Three-Ring Conception of Giftedness' (Renzulli, 1978), 'The Enrichment Triad Model' (Renzulli, 1977) and the 'Schoolwide Enrichment Model' (Renzulli and Reis, 1985, 1997).

Although Renzulli's work was considered to be highly controversial at first, his definition of giftedness received worldwide recognition:

> Giftedness consists of an interaction among three basic clusters of human traits; above average general abilities, high levels of task commitment (motivation) and high levels of creativity. Gifted and talented children are those possessing or capable of developing these composite set of traits and applying them to any potentially valuable area of human performance.
>
> (Renzulli, 1978:261)

Within the above-average abilities Renzulli makes a distinction between general abilities (processing information, integrating experiences and abstract thinking) and specific abilities (the capacity to acquire knowledge or perform in an activity). By creativity Renzulli understands the fluency, flexibility and originality of thought, an openness to experience, sensitivity to stimulations and a willingness to take risks. By task commitment he understands motivation turned into action (perseverance, endurance, hard work, self-confidence, perceptiveness and a special fascination with a special subject). Renzulli argues that without task commitment

high achievement is simply not possible. Only if characteristics from all three rings work together can high achievement or gifted behaviour be witnessed.

Renzulli has recently shifted his emphasis towards the background factors in his models, the personality and environmental factors influencing gifted behaviour. Although he has moved away from reliance on IQ testing, in stating that gifted children possess or are capable of developing the above-mentioned traits, complex areas such as underachievement remain largely unaccounted for. It may be argued that underachieving gifted children may tend not to display high levels of task commitment.

Gradually the notions of creativity (Guilford, 1950; Torrance, 1967) and talent development (Feldhusen, 1995; Renzulli, 1994; Van Tassel-Baska, 1998) also became synonymous with the conception of giftedness. Breaking away from the 'single intelligence' lens of defining giftedness, Sternberg and Gardner expanded the multi-dimensional view of ability by proposing that giftedness was a composite of 'multiple intelligences' which focused on specific talents or aptitudes.

Sternberg's Triarchic Theory of Intelligence

According to Sternberg's Triarchic Theory of Intelligence (1985, 1986), there are three distinct types of intelligence: componential, experiential and contextual. Componential or analytical intelligence emphasises effectiveness in information processing (planning, monitoring and evaluation) leading to the ability to think critically and analytically. Experiential or creative intelligence (skills and abilities) emphasises insight and the ability to formulate new ideas and create new solutions. Contextual or practical intelligence (processing and encoding) emphasises intelligence in a practical sense, leading to the ability to recognise factors which influence success

in various tasks. This might involve adapting and shaping their environment to accomplish their goals.

The theory asserts that the kind of intelligence needed in order to achieve success in life is broader than that measured by conventional tests of intelligence (memory and analytical abilities). The cultural context, creative abilities and practical abilities are important too. The intelligence tests are too narrow and result in students being derailed early on who may have very important but unrecognised abilities to achieve what they want in life. However, Gottfredson (2003) criticises the triarchic theory for its lack of adequate scientific evidence and claims that it fails to acknowledge the importance of genetic factors in intelligence.

Gardner's Multiple Intelligences

Dr Howard Gardner, Professor of Education at Harvard University, developed the theory of multiple intelligences (Gardner, 1983) in which he proposes eight different intelligences to account for a broader range of human potential in children and adults. These intelligences are: linguistic intelligence (language skills); logical-mathematical intelligence (number/reasoning skills); spatial intelligence (visual skills); bodily-kinaesthetic intelligence (physical skills); musical intelligence (musical skills); interpersonal intelligence (awareness of others); intrapersonal intelligence (self-awareness skills); and naturalist intelligence (nature awareness). The Multiple Intelligences (MI) Theory has met with worldwide acceptance by many educators as it has given them the opportunity to shift away from the usual attention given to learners who show high ability in linguistic and logical-mathematical intelligences. Equal attention can be given to individuals who show high ability in the other intelligences: artists, architects, musicians, naturalists, designers, dancers, therapists and

entrepreneurs. While the MI Theory has been adopted by many schools as a pedagogy, it has also received a lot of criticism. White, (1997) contends that the MI Theory lacks empirical evidence and the different intelligences are just names for 'talents' or different 'personalities' and there is overlap between the intelligences. For example, it can be argued that musical intelligence and bodily-kinaesthetic intelligence are better approached as talents (they do not normally need to adapt to life demands). Gardner has recently added to this list, spiritual intelligence (cosmic issues) and existential intelligence (ultimate issues), however, the evidence for their distinctiveness has yet to be replicated. White (1997) also maintains that there are significant issues around the individual criteria that Gardner employs. He contests the element of subjective judgement involved in the way the criteria are to be applied and the reasons why these particular criteria are relevant.

Gagne's Differentiated Model of Giftedness and Talent (DMGT)

Professor Francoys Gagné makes a clear distinction between 'gifts' and 'talents' in the DMGT (Gagné, 2005). In this model he defines 'giftedness' as 'the possession and use of untrained and spontaneously expressed natural abilities (called aptitudes or gifts) in at least one ability domain to a degree that places a child among the top 10 per cent of his or her age peers'. By contrast, the term 'talent' is defined as the 'superior mastery of systematically developed abilities (or skills) and knowledge in at least one field of human activity to a degree that places a child's achievement within the upper 10 per cent of age-peers who are active in that field or fields'.

In the DMGT (Appendix A) Gagné lists four domains of natural abilities (aptitudes or gifts) which according to him are mostly genetically determined:

- *intellectual abilities*: reasoning, memory, sense of observation, judgement and metacognition;
- *creative abilities*: inventiveness, imagination, originality and fluency;
- *socioaffective abilities*: perceptiveness, communication (empathy and tact) and influence;
- *sensorimotor abilities*: sensitivity (the senses), strength, endurance, coordination.

Gagné argues that when these aptitudes or gifts undergo systematically developed processes (learning, training, practising) they are converted to or translated into *talents* or skills in different fields (academics, games, business, leisure, technology, arts, sports). However, the development processes may be influenced by two types of catalysts: environmental and intrapersonal. The environment, Gagné suggests, includes such factors as geographic location and family and other persons having positive or negative effects on the process of talent development. The learning, training and practising which occurs both in school settings and outside school, influences the process of talent development throughout the student's lifespan. Gagné's model includes chance and significant events, such as the death of a parent or winning a prize, as elements which can greatly influence the course of talent development. 'Intrapersonal catalysts' such as motivation and personality play a crucial role in initiating, guiding and sustaining the process of talent development. The school environment can play an essential part in recognising and developing giftedness.

According to Gagné the lifespan perspective of the development of giftedness into talent, places special emphasis on the environment. He claims that giftedness can begin to be developed into talent in a school environment which enables a child to

encounter, learn, train and practise an aptitude to a high level of skill. He continues to suggest that the teacher, peer group, family and curriculum of a school are part of the system within which the child develops this ability. If the training is being done outside the school, it (the school) can take measures to accommodate this in a way that will benefit the child.

The DMGT has been endorsed by educational authorities in a few states in the US, and also in Australia. In England, however, the English model for gifted education has been adopted as the guiding strategy for outlining how to identify and provide for gifted and talented learners. It is an attempt to respond to some of the ongoing dilemmas, carefully picking its way through the complexities and differences of opinions. It is not the only resolution/solution to these difficulties but it is the one that provided the context within which this study was conducted and is discussed briefly below and then in more detail in Part 2 of this chapter.

The English model of gifted education

The English model is based on the multiple intelligences conceptions promoted by researchers like Guilford (1954), Gardner (1983), Renzulli (1977), Sternberg (1985) and Gagné (1994) rather than the single intelligence conceptions. In adopting these approaches, the English model incorporates 'creativity' and 'talent' in dance, drama, music and sport with cognitive ability enabling a broad conception of ability. Gifted and talented pupils are considered to be 'gifted' if they are in the top 5-10 per cent of the school population in academic subjects and 'talented' if they have exceptional ability in subjects such as music, art or sport (EiC, 2003). The top 5-10 per cent refers to attainment in statutory National Curriculum tests or national qualifications.

The above conceptions of giftedness portrays that defining 'gifted' and 'talented' is controversial and complex - but even if we can do that effectively, it is a quite different question as to whether or not we should respond to the needs of such children within the state school system. This ongoing debate is explored next.

2.3.3 Should we identify gifted learners?

Education targeted at gifted children that essentially singles them out for preferential treatment and sets them apart from the majority has been a policy that many educators oppose as 'elitist' (Gross, 1998). Yet other educators have identified the need for a diversified curriculum, specifically to address the needs of gifted children who are underachievers (Van Tassel-Baska, 1992). The question often posed is – why is there a need to identify gifted learners? Below are some broad arguments put forward by those educators who believe that there should be no distinction between children since 'all children are gifted' and those who believe that some children have 'gifts' or 'talents' in one or more areas and need special attention.

In *Learning without Limits* (Hart *et al.* 2004) the authors support the idea of 'all children being gifted'. They argue that every child has some innate potential that needs to be awakened. With the right teacher and appropriate conditions, 'all' children can be 'gifted'. They contend that when we as educators label children with having lower ability we place limits on these children. We are responsible for putting constraints on them by giving them labels. The labelled children fulfil the teachers' prophesy and only produce what is expected from them. Thus, the children begin to respond to the judgements that the teachers and other adults have made about them and their 'supposed' ability levels (usually based on reports, marks and grades). The authors reject the idea of any differences in ability:

> Learning which is free from constraints imposed by ability-focused practices, free from the indignity of being labelled top, middle or bottom, fast or slow, free from the wounding consciousness of being treated as someone who can aspire at best to only limited achievements. Learning without limits becomes possible when young people's school experiences are not organised and structured on the basis of judgements of ability. (Hart *et al.* 2004: p.3)

When exploring the idea of giftedness in an educational climate that emphasises equity and excellence for all students it is important to remember that although some students learn more quickly than others and can take on more challenging work, these students are not more important or more deserving than others. When we acknowledge that students have different abilities we are not denying the potential of the child who at that time is experiencing some difficulty, but rather drawing attention to the unique needs of the one who has already mastered what is being taught (Stepanek, 1999; Thompson, 1999). If any learning is to take place then these children need the necessary interaction or instruction to take them to a new level. Stepanek (1999) argues that not recognising their special ability is unjust:

> Expecting gifted students to fend for themselves as the class repeats concepts they have already mastered is just as unfair as forging ahead while some students are still trying to grasp a concept. (p.2)

If these children are not provided with challenges they may end up developing behavioural problems as a result of boredom or disenchantment with their learning environment. A recent study by Schofield and Hotulainen (2004) found evidence to show that underachieving gifted children are more likely to drop out than regular children.

> The charges of elitism which are often levelled at those programs that cater for children with exceptional talent, generally take the form of claims that such children will inevitably cope well with academic life, which could be described as the "cream always rises to the top" argument. "Not so", argue the researchers of gifted education. They cite the high incidence of gifted underachievement, the failure of many gifted students to complete their education, the fact that many teachers claim to have never, or rarely taught a gifted student, and the consequent loss to the broader community of such lack of identification and support. (p.2)

The authors of the above study found that without interaction with peers of equal or higher ability in school there is a chance of stagnation, despair and hopelessness (fish left out of water syndrome) and children simply becoming reserved and often just give up. Several studies have shown that 'societal attitudes towards these children can be exploitative, negative, or punitive: these attitudes are evident both in schools and in the media' (Kearney, 1996:4). In an American study (US Commission, 1971), 57.5 per cent of a representative sample of school principals across the country rejected the idea that there were gifted pupils in their schools (Vernon, 1977 as cited in Kerry, 1978). Governmental cutbacks are often targeted at provisions for the gifted as it is wrongly believed that the gifted will succeed no matter what.

Another controversial issue is the 'gifted' or 'talented' label and its repercussions both for the ones being labelled and for those who are not. It is thought by some that it may lower the self-esteem of those who have not been labelled, although most children already have a sense of their ability compared to those around them and have to learn to accept these differences. The majority of gifted children do not like to be labelled because of the social stigma associated with being different from their peers. They may get ostracised and referred to as being 'weird' or as 'nerds' (Kaur, 2004).

The way children react to being labelled as 'gifted' may vary according to their cultural backgrounds. Since the 'gifted' label is not standardised across communities, a 'gifted' child in one community might not be 'gifted' in another community. In an American study of children who were in pre-college gifted programmes it was found that their self-esteem was highest when attention was focused on their gifts but lowest when focused on personal relationships (Colangelo and Assouline, 1995). Most of the children in an Israeli national survey of special classes for the gifted felt that the label increased their self-confidence (Shahal, 1995). However, in a British longitudinal study, it was found that those who had been labelled 'gifted' had significantly ($p < 1.0$) more behaviour problems than those of equal ability who were not so labelled; the children's school achievements were directly related to accessibility of facilities for learning, as well as to parental involvement and example. Furthermore, there was evidence that some of the 'gifted' children had emotional problems because of the intense pressure put on them to live up to the label by their parents, teachers or peers (Freeman, 1997). Labelling may not be appropriate all the time but there may be some situations where it may help the 'gifted' child who may be experiencing isolation to understand his or her 'abnormalities' and feel more comfortable with his or her 'gift' or 'talent'. It may help identify the gifted child as being not one who has behavioural problems but one who needs more challenging work; and it may help to motivate gifted under-achievers who are hiding their ability.

It is also said that children who are identified as gifted or are segregated into groups become arrogant and conceited and are elitist. However, according to a study by Newland (1976) cited by Silverman (2003), there is no real evidence to show that classes for the gifted breed elitism. On the contrary, Silverman suggests that gifted

pupils when grouped together are likely to be less conceited because of the competition they get. Often when they are in 'normal' classes, always being at the top gives them a 'ballooned sense of importance'. This can sometimes be harmful, especially when they go to university and find themselves no longer at the top of their peer group. In the theoretical model underlying the BFLPE (Big-Fish Little-Pond Effect), Marsh (1995) hypothesised that students compare their own academic ability with the academic abilities of their peers and use this social comparison impression as one basis for forming their own academic self-concept. A negative BFLPE occurs when equally able students have lower academic self-concepts when they compare themselves to more-able students, and higher academic self-concepts occurs when they compare themselves with less-able students.

There are, however, other reasons that gifted education may be considered as being elitist. It is very likely that children with enriched affluent pre-school home environments score higher on placement tests compared to those who come from impoverished or ethnic backgrounds. If children are put into tracks or sets based on these test scores and these tracks are then maintained throughout their school life, elitist groups can result. Gifted programmes may well be flawed because their selection criteria are far too narrow. The intelligence tests they use to judge children's giftedness are poor measures of a child's intellectual capacity; they often suffer from cultural bias and cannot capture a child's developmental growth over time. Moreover, IQ tests measure only one form of intelligence and have limited value. Research has consistently shown little relationship between measured forms of children's intelligence and their relative success later in life.

Professor Eyre, Director of NAGTY, concedes that children from largely affluent backgrounds are more likely to be identified as gifted or talented, and links this to their socio-economic roots:

> even in a well designed system, where barriers limiting the achievements of gifted and talented students are removed, it is likely that low aspiration among poorer groups combined with limited access to opportunities, will mean that those reaping the most benefit will be largely from affluent groups.
>
> (Eyre, 2004:3)

While educators, researchers and policy-makers continue to debate whether giftedness is inherited, developed, manifested in the ability to manipulate life situations or a result of some combination of these ideas, many are yet to be convinced that such a thing as giftedness even exists. There are valid issues and concerns raised by those who believe that all children are gifted, but, on the other hand, parents who are convinced that their child is 'gifted' child are beginning to shop around for schools that will be able to provide for their needs. National Research Centres for Gifted and Talented children are forging ahead by propagating information, services and programmes for gifted and talented children, parents and educators. In order to provide the necessary support for the gifted learners have to be identified.

2.4 Identification: how do we recognise gifted learners?

This section describes and lists some of the most common characteristics exhibited by gifted and talented learners (Section 2.4.1). It then goes on to discuss some of the strategies used for purposes of identification by many institutions (Section 2.4.2).

2.4.1 Characteristics of gifted learners

Gifted and talented learners are not an homogenous group. They vary in their abilities and their needs. As a result they may exhibit some of the following characteristics in varying degrees and intensities. Some gifted children may be only slightly above average with respect to the criteria applied, while others are so unusual as to be extremely rare. Some are gifted/talented in a single area, while others seem to be unusually able in practically all areas. Some individuals who seem to have outstanding ability have relatively little motivation in developing that potential, while others are very motivated. It is not expected that a gifted child will exhibit all of the traits listed, nor are the presence of any of these characteristics proof that a child is gifted.

There are several characteristics that are attributed to those learners that are considered gifted. Some of the characteristics that emerged from the evaluative study, 'Enjoyably difficult', of the Cambridge Online Latin Project (Dyson, 2003) which offered this online learning as an enrichment activity in Year 8 for gifted and talented learners were: perseverance (willingness to stick at something even though it is challenging); readiness to respond to challenge; and a sense of enjoyment when dealing with difficult situations. Terman and Oden (1947) found that high achievers were 'strongly motivated and persistent'. 'Renzulli's Rings' (1977) also illustrate a somewhat similar view of giftedness (task commitment, creativity and above-average ability). Bruner (1960) viewed gifted children as 'active problem solvers' who are ready to explore 'difficult' subjects (p.80). In a case study which looked at able pupils in a mixed-ability classroom, it was found that the 'enthusiasm of more able children to learn independently from peers or from reference material, was highlighted by many teachers as a characteristic of more able pupils' (Davies,

2001:32). Other characteristics as identified by Kanevsky *et al.* in 1994 (taken from a table given in Davies, 2001:33) are:

- *humour*: exceptionally keen sense of the comical, the bizarre and the absurd;
- *motivation*: intense desire to know, do, feel, create or understand;
- *interests*: ardent, sometimes unusual, passionate and sometimes fleeting;
- *communication/expressiveness*: extraordinary ability to convey meaning or emotion through words, actions, symbols, sounds or media;
- *inquiry*: problem exploration, observation or experimentation with events, objects ideas, symbols or media;
- *problem-solving*: outstanding ability to bring order to chaos through the invention and monitoring of paths to a goal, enjoyment of challenge;
- *sensitivity*: unusually open, perceptive or responsive to experiences, feelings and others;
- *intuition*: sudden recognition of connections or deeper meanings without conscious awareness of reasoning or thought;
- *reasoning*: outstanding ability to think things through and consider implications or alternatives - rich, highly conscious, goal-oriented thoughts;
- *imagination (creativity)*: extraordinary capacity for ingenious flexible use of ideas, processes or materials;
- *memory/knowledge/understanding*: unusual capacity to acquire, integrate, retain and retrieve information or skills;
- *learning*: ability to acquire sophisticated understandings with amazing speed and apparent ease.

The above list of characteristics is not a comprehensive one and only gives a general idea. The diversity of characteristics within gifted learners is further elucidated by Betts and Neihart (1988) who developed six profiles of gifted and talented learners. After several years of observations, interviews and reviews of literature which looked closely at the feelings (emotional), behaviour (social) and cognitive (intellectual) needs of gifted learners the authors claim that the first profile, Type I, '*The Successful'*, usually accounts for 90 per cent of identified gifted students. These types of learners appear to have learned the system; they learn well, seek parental and teacher approval, are well liked by peers, are included in social groups, score high on tests and end up getting identified for placement in programmes for the gifted,. They seldom show any signs of behavioural problems. An illusion that they are confident and that they can be left on their own is created. Betts and Neihart (1988) argue that this is not so as these learners often become bored with school but learn to use the system in order to get by with as little effort as possible, ' ...they fail to learn needed skills and attitudes for autonomy, but they do achieve. Overall, these children may appear to have positive self-concepts because they have been affirmed for their achievements' (p.2). This lack of effort may lead to later underachievement in higher education.

The second profile, Type II, *'The Challenging*' are the divergently gifted; highly creative learners. Bett and Neihart (1988) contend that most school systems fail to identify these learners as they may exhibit behavioural problems; they may appear to be obstinate, tactless, sarcastic and question authority. This type of behaviour ends up in conflict, struggle and peer alienation. However, in some cases this type of learners may have a sense of humour and creativity that is very appealing to peers. These types may be 'at risk'; they may drop out or embrace drugs if

appropriate interventions are not made. Type III, *'The Underground'*, gifted learners want to hide their giftedness in an effort to belong and be included in a non-gifted peer group. This sometimes leads to conflict with self and adult expectations. While these learners are undergoing transition, alternatives should be explored to meet their academic needs. Betts and Neihart (1988) go on to say that Type IVs, *'The Dropouts'*, are gifted learners who feel rejected, express their anger with adults and with themselves because the system has not met their needs for many years. They have low self-esteem, become disenchanted, may also become depressed and act defensively as their interests may 'lie outside the realm of the regular school curriculum and they fail to receive support and affirmation for their talent and interest in these unusual areas' (p.4). *'The Double-Labelled'*, Type V, refers to gifted children who are physically or emotionally handicapped in some way, or who have learning disabilities. These students often do not exhibit behaviours that schools look for in the gifted. They show symptoms of stress, are often impatient and critical and react stubbornly to criticism. This may be because they feel discouraged, frustrated, rejected, helpless or isolated. The last profile Type VI, *'The Autonomous Learner'*. works effectively because he or she has learned to use the system to create new opportunities for him or herself. He or she is independent, self-directed, has strong positive self-concepts, displays leadership and is well respected by adults and peers. These are the gifted individuals who can visualise and realise their own educational and personal goals.

Identifying and responding to the needs of gifted and talented learners presents many dilemmas. The next section provides an overview of what literature suggests as some of the techniques that have been implemented by educators.

2.4.2 Strategies for identifying gifted and talented learners

Because identifying high ability can be difficult, particularly when a child is under-achieving, in recent years, the consensus among the literature is that identification of gifted and talented students should be by multiple criteria (Bentley, 2003; Freeman, 1998; George, 1995; Montgomery, 1996; Pocklington *et al.* 2002; Teare, 1997; Welding, 1998; as cited in White *et al.* 2003). One-dimensional methods of identification may result in an under-representation of culturally diverse students in gifted programmes.

Very high intelligence, as measured by IQ tests, is by far the most popular criterion for defining children as gifted. However, as mentioned earlier, this procedure is highly contentious because of its link with relatively fixed abilities. The more accepted view of intelligence is that it is an individual way of organising and using knowledge, which is dependent on the social and physical environment. Since different abilities emerge at different ages and in different circumstances, identification must be an ongoing process. With the growing influence of the Theory of Multiple Intelligences (Gardner, 1983), other measures which aim to distinguish the many components of intelligence, so that they can be presented as profiles of ability are emerging: standardised intelligence tests such as Wechsler-Ability Scales for Children, Stanford-Binet Intelligence Scales and British-Ability Scales are now used to assess intelligence and cognitive abilities at a given point.

In the UK, the Qualifications and Curriculum Authority (QCA) advise the use of tests that attempt to measure underlying ability, such as Cognitive Abilities Tests (CATs) and Middle Years Information Systems (MIDYIS) (see table on p.171 for details). It is suggested that a combination of the following strategies be used to identify gifted and talented behaviours:

- performance criteria in sport, physical education and creative arts;
- teacher observation and assessment of written work (approach, originality);
- careful tracking of pupils' progress;
- cautious use of checklists of characteristics of gifted children;
- information from other teachers in both the present and previous schools;
- information from parents and external agencies such as sports clubs;
- information from peers;
- information from the children themselves.

While the above-mentioned strategies may be useful in identifying underachievers, young gifted children, gifted children with traumas and children for the purpose of acceleration, they may be biased for minority groups with different languages and cultural backgrounds (Hewston *et al.* 2005). Sternberg (1997) cautions that it is important to be aware of what is culturally valued and what is not; this influences the way learners shape their activities in everyday life, and must be part of any assessment of intelligence. Otherwise, he says potentially high-achieving children may be missed as a result of unreliable non-research-based checklists which may be biased against gender, ethnicity or handicaps. He continues to advise that it is also important to remember that abilities change over time; some learners may develop later than expected while others may show a sudden drop in achievement. In light of this, identification must be an ongoing procedure.

2.5 The needs of gifted and talented learners

This section first endeavours to show what literature classifies as some of the needs of gifted children (Section 2.5.1). It then describes the most common strategies that are currently being used to meet these needs (Section 2.5.2).

2.5.1 What are the needs of gifted and talented learners?

In many ways, gifted children have the same social and emotional needs as other children, but their needs are often intensified by the characteristics that make them gifted. Each type of gifted child has specific needs as well as having needs in common with other gifted children. In an article which outlines several approaches to identification and provision for exceptionally able pupils in Essex, UK, Whybra (1992) discusses their needs under two broad headings - recognition and understanding of emotional, social and intellectual needs. He does not specify whom he considers to be 'exceptionally able' in this article but goes on to suggest a multi-dimensional approach to procedures for identification and proposes a global approach to provision, advocating a whole-school approach with a number of well-argued and practical procedures for implementation. He suggests three broad categories of gifted children and identifies their needs in the following manner:

1. *The 'da Vinci' type*: children gifted in a wide range of skills and subjects across the curriculum. The needs of such children include exercising their considerable mental powers in relevant in-depth areas of research/study/problem-solving in all areas of the curriculum. They need the time and the flexibility of approach and opportunity to exercise their skills and abilities and to put them to effective use.
2. *The 'Mozart' type*: children gifted with a specific gift or a set of talents in one skill or subject area. These children need the opportunity to diversify and learn to transfer their skills which make them exceptional in their one chosen sphere to other areas of curriculum in order for them to achieve on a broad basis.

3. *The 'Churchill' type*: children that do not have talents in the perceived traditional school subject disciplines and do not achieve well in them. Their talents lie in a skills area rather than in a subject area. For example: organisational ability, logical awareness and leadership skills. This type of children need to find a medium into which their skills can be channelled. They need to understand the value of their abilities, the possibilities of their application and the relevance of education in general.

If such definitions are correct then the diverse needs of gifted children raise a major problem. How does a teacher address them in a classroom which already has students of varying ability?

> The needs of gifted pupils and their teachers are complex. Any tentative resolution to the problems emerges from each school's amalgam of educational philosophy, methods and organization: the personality, skills and experience of the teacher; the temperament, background and needs of the child. (Wallace as cited in Whybra, 1992: 87)

Kerry (1978) argued that there are three paramount needs that warranted attention

1. *The need to develop study skills*: pupils can be shown how to operate methods of self-testing (worksheets) in order to decide for themselves when to progress to a new topic if the teacher is temporarily too busy to attend to them.
2. *The need to develop skills of higher level thinking*: Pupils can be encouraged by teachers with adequate questioning skills.
3. *The need to be rewarded for scholastic achievement and at the same time to retain an identity with the class group*: pupils can be made comfortable with their ability by other pupils and teachers.

In this study, Kerry observed 'bright' students in mixed-ability classes who had an IQ of 125-14 plus and who were potential successful 'A' level candidates. Carder (1999), in a longitudinal study with gifted children, who had a high IQ and were generally in the top 4-8 per cent identified the following needs:

- *the need for children of like ability to work together;*
- *the need to express their giftedness within a specific programme.*

It is suggested by Carder that the above two needs can be addressed by having a flexible pace, giving differentiated tasks and emphasising interest and talent development.

Studies have also shown that gifted students feel deprived of academic challenge in the classroom and leave school more often than their peers (Strom *et al.* 1994). Whybra (1992) suggests that some of the manifold reasons may include:

- the gifted child feels out of step with his or her time, peers and even family;
- he or she feels bewildered, and experiences deep frustrations and problems of adjustment;
- he or she feels different, but it is human nature to want to belong and to identify with the group;
- he or she may feel acutely sensitive, lonely, intellectually isolated and prematurely aware of problems without the emotional maturity to cope with them.

Gross (1998) suggests that in an effort to conform to values perceived as normal within a peer culture, some gifted children put on masks to hide their

differences and learn to develop alternative identities. In search of acceptance and intimacy they prefer to give up or cover up their deepest interests. Often inner conflicts ensue, leading to unhappiness and discontentment. If the assumed identity is helping them to be socially accepted it becomes increasingly hard to remove the mask. They perceive their differences as 'abnormal' and have difficulty accepting themselves as they are. Gross (1998) also notes that researchers like Sheldon (1959); DeHaan and Havighurst 1961; Janos, 1983 have found that these children experience a social isolation caused by the absence of a suitable peer group with whom to relate.

> Gifted children and adolescents need the opportunity to work and socialize with others of similar abilities and interests if they are to grow towards self-acceptance.
>
> (Gross, 1998:1)

According to Jesson (2005), 'Bright children have one overwhelming need if they are to fulfil their potential in secondary education: other bright children'. His research made the following additional claims about gifted and talented children:

- Children identified at age 11 as in the nation's top 5 per cent in national curriculum tests of English and Maths went on to achieve seven grade As or better at GCSE if studying in 'clusters' of at least 20 similarly gifted pupils. If isolated among less-able pupils, they achieved barely half as many.

- Nearly 60 per cent of the brightest 11-year-olds have slipped in tests to the point where they are no longer being tracked for their potential by age 14.

Jesson's research further suggested the importance of identifying and nurturing gifted children by keeping them in the company of other similar ability children and meeting their needs so that they can reach their full potential.

2.5.2 Strategies for meeting the needs of gifted children

How then should school systems respond to the needs of such you people? Both at the macro and the micro level policies for defining, identifying and providing for gifted children vary tremendously. Different countries, different school authorities and, even, different schools have their own conceptions of giftedness and how to deal with them. Countries like England have embraced the whole-school approach or inclusion where the students are not separated from their peers. Some countries like the US and Canada have taken the opposite approach (seclusion) by providing either separate schools for the gifted or separate programmes within a school which segregate the gifted and talented students from their peers. Within both these approaches there are various forms of strategies which are recognised by researchers as being beneficial for meeting the needs of gifted and talented learners: differentiation, enrichment/ extension, acceleration/ curriculum compacting/grouping, mentoring and e-learning or distance learning. These are discussed briefly below.

Differentiation

Eyre (1997) defines differentiation within the English model as 'recognizing individual differences and trying to find institutional strategies which take account of them' (p.38). According to Renzulli (1997) differentiation can address the needs of highly able learners and direct them into choices that challenge their potential. He suggests adding depth to the content; using multiple instructional techniques and materials to enhance and motivate different learning styles of students (Socratic method, simulations, independent study and higher level thinking questions); the creation of a student-centred environment which promotes the students' ability to express themselves; and an increased amount of teacher involvement in the learning

exploration where he (the teacher) models his passion and expertise for the subject. By developing and utilising ways of differentiation in a consistent and progressive manner, Renzulli argues that it is possible to address the needs of highly able learners and direct them into making choices that challenge their potential.

Enrichment/Extension

Enrichment or extension is used as a distinct teaching and learning strategy when there is planned intervention on behalf of the student(s), in order to broaden their knowledge and understanding beyond the usual parameters of a subject or topic. The Enrichment Triad Model (Renzulli *et al.* 1986) suggests three types of enrichment activities:

- *TYPE I - General interest/Exploratory activities*: activities designed to provide students with as wide a range of experiences as possible (excursions, clubs, interest centres, visiting speakers and brainstorming sessions);
- *TYPE II - Group training activities / Skills development*: activities designed to develop creative and critical thinking, learning how to learn using advanced-level reference materials and communicating effectively (designing, experimenting, comparing, analysing, recording and classifying);
- *TYPE III - Individual and small group investigation of real problems*: students apply the knowledge and skills they have developed while working through Type I and Type II activities. They become investigators of real problems, working on specific areas of study towards presentation to a real audience (researching, debating, surveying, making a presentation, writing a journal article or producing a book or play).

Acceleration/ Curriculum compacting/Grouping

Acceleration is used as a distinct teaching and learning strategy where the student's passage through school is speeded up by curriculum acceleration within a year level; by curriculum compression or compaction; by subject acceleration or by grade or year skipping. The student may be allowed to take advanced courses with older students in that subject while remaining in their own grade for other subjects.

The commonly accepted meaning of ability grouping where acceleration can be targeted relates to re-organising students for the purpose of providing curriculum aimed at a common instructional level. Some of the options available for grouping are: streaming; setting or cluster/mixed-ability grouping. Streaming means categorising learners by their overall ability where they are split into several different hierarchical groups which stay together for all lessons. Setting is a subject-specific approach where learners of similar ability are grouped together just for certain lessons; there is independent assessments of ability for each subject. So, for example, it would be possible to be in a top set for French and a lower set for Mathematics. Research has indicated that for the gifted streaming improves their achievements, ambitions, critical thinking and creativity, but has little impact on self-esteem (Chyriwsky and Kennard, 1997 as cited in Freeman, 1997). The beneficial effects come from the possibilities within the group to enrich or accelerate the curriculum. However, British mathematics teachers have been found to strongly prefer setting over streaming (Rogers and Span,1993 as cited in Freeman, 1997).

Cluster grouping is a grouping practice whereby small groups of students with similar instructional needs are clustered within a primarily heterogeneous classroom. In other words, within a mixed-ability classroom, if there are a few identified gifted students, they are clustered into one or two groups. The teacher is usually trained to

teach highly able students and is able to provide differentiated instructional opportunities for them.

In England, Eyre (1997) and Freeman (1998) favour mixed-ability grouping for gifted and talented students over other types of grouping, as they feel that it allows these students necessary social exposure to others (these mixed-ability classes may or may not have cluster grouping). This view is, however, contested by others – in that teachers may not always able to provide the required differentiation within these classes for the able students and in effect their needs are not met (Teare, 1997 as cited in White *et al.* 2003). My own research also confirmed this view (Kaur, 2004). It can be argued that although setting may be easier for teachers there is no scientific evidence whether it has any measurable provable benefit for students at either end of the spectrum. Teacher 'labels' may become self-fulfilling prophecies such that top sets expected to perform better end up achieving excellent results. Bottom sets, on the other hand, which are expected to perform badly and often to behave badly, end up doing exactly that. As Hargreaves (1968) and Lacey (1970) found in their classic studies the teacher's low expectations of bottom sets and secondary-modern students may result in less preparation and effort on the part of the teacher. Selection, streaming, banding and setting tend to perpetuate the existing class structure and limit the opportunities of working-class children. Hargreaves and Lacey further claim that there is a predominance of working-class children in bottom sets and non-selective schools who do not have access to "higher" academic knowledge and skills. On the other hand, many teachers argue that in comprehensive schools, mixed-ability groups are considered to be important in the social development of children and the progressive development of society.

A further strategy used is acceleration, for example, grade skipping. This is the simplest and the most economical form of special provision for gifted learners but there is still some resistance from teachers and parents in several countries. According to them acceleration runs counter to the notion of healthy social development. It is argued that by taking away the higher-ability learners the classroom tends to lose stimulation. Learners who skip grades may not be either physically or emotionally mature enough to fit in socially with the older children in the new class. The controversy about whether gifted learners should be kept with their age peers is an ongoing one and attitudes are often dependent on the cultural backgrounds. According to research conducted on grade skipping it has been found that while acceleration may be beneficial for some gifted students it may not be appropriate for all children (Benbow, 1991).

Mentoring

Mentoring is another approach that is often used for meeting the needs of gifted children. In the absence of any precise definitions for mentoring, Boston (1976, as cited in Berger, 1990) summarises 'mentoring' very well; 'it is a dynamic shared relationship in which values, attitudes, passions and traditions are passed from one person to another and internalised' p.1. Boston argues that the purpose of mentoring is to transform lives. Berger goes on to say that 'one of the most valuable experiences gifted learners can have is exposure to a mentor who is willing to share personal values, a particular interest, time, talents and skills (Berger, 1990:1). According to Boston mentors can provide valuable direction and clarification by informing the learners of opportunities they may not have been aware of, a listening ear and a different perspective.

There are several types of mentoring: natural or informal mentoring, situational mentoring, supervisory mentoring and formal mentoring. Natural mentoring occurs all the time between people who have a lot in common. Situational mentoring occurs when a learner needs guidance and advice and the right help is provided at the right time . Supervisory mentoring occurs when a mentor, who is not necessarily an expert in the area of the learner's interest acts as guide for them in their present position. Formal mentoring programmes are structured programmes in which an organisation matches mentors with mentees and monitors the progress of the mentoring connection.

Research findings have indicated that 'mentoring experiences can significantly contribute to the emotional, social, and vocational development of gifted adolescents: This may be particularly true in the case of gifted females and for any students interested in science or mathematics' (Casey and Shore, 2000:229). Other researchers have found that mentorship programmes benefit gifted students personally by enhancing their self-esteem and self-confidence and academically by augmenting their knowledge skills and helping them to map their career plans (Beck, 1989; Edlind and Haensly, 1985). Students from disadvantaged backgrounds may also benefit strongly from mentor relationships (McIntosh and Greenlaw, 1990).

Mentors are usually older adults who are experienced successful professionals, such as musicians, artists, engineers, academics or researchers but may also be either older or same age students. There is still not sufficient research about the nature of mentoring relationships and little is known about what the outcomes are. It has been suggested, but is deeply contested, that by providing inspiration, encouragement and guidance mentors can instil or pass on their own values, attitudes, struggles, triumphs and dreams. They can 'infect' the learner(s) with their passions by being the role

models students aspire to (Berger, 1990). Mentors may also be instrumental in advancing gifted students' careers and educational pathways by putting them in touch with the resources or people who may know more about their interests (Toth, 1999).

E-learning or distance learning

E-learning or distance learning is defined as any educational situation in which teacher and student are not engaged face to face (Center for Talent Development, *Imagine* Nov./Dec. 1995:3). All interactions happen online in a virtual environment. This type of learning provides opportunities for gifted students to take classes their own schools are unable to offer and learn at their own pace. They can enrich and accelerate themselves in a particular subject to levels they find more challenging than the ones offered during the class. Online learning allows the gifted children to transcend time and space, and makes available to them a whole range of worldwide resources. Since online learning is the focus of this study, it will not be discussed in detail here but in Chapter 3.

2.5.3 Summary of the needs of gifted learners and ways to meet them

Sections 2.5.1 and 2.5.2 identified various needs of gifted learners and then discussed some common strategies that may be used to meet them. Among these strategies of particular importance to this study is the e-learning or distance learning strategy, since the aim of this inquiry is to investigate the potential of discussion forums to address the needs of gifted and talented learners in an online community. In addition to the mentoring and grouping aspect of this environment, differentiation, acceleration and enrichment seem to be incorporated under the broad umbrella of this strategy. The research questions ask whether participation in online discussion forums can help to address some of the needs of the gifted learners.

Part 1 of this chapter has attempted to place the study in the existing literature by painting a picture with broad strokes of the different views and definitions of giftedness, how to identify and then meet the needs of gifted and talented learners. Despite all of the earlier debates and dilemmas and differences of opinion, governments do in the end have to make a decision. Part 2 of this chapter discusses what has happened in England.

PART 2

2.6 Provision for gifted and talented learners in England

This part of the chapter outlines some of the main events that have influenced the current policies and provision for the gifted and talented learners in England. It begins by providing a general background (Section 2.6.1) of the case for and against giftedness in the UK leading to the present situation for gifted education (Section 2.6.2). This is followed by a brief description of how the government initiatives (Section 2.6.3) designed to meet the needs of gifted and talented students have evolved and sets the context for the so-called English model for gifted education (Eyre, 2004). This model has been embraced nationally to meet the needs of gifted and talented learners and was instrumental in guiding and defining who the 'gifted' and 'talented' are in this study.

2.6.1 Background context

The case for and against gifted and talented education

The political debate over the education of gifted pupils in the UK has been going on for some time; it has been a controversial area with strong advocates and detractors. On the advocate side there are researchers like Ruth Cigman and Joan Freeman who have a set of arguments about 'rights' of an appropriate education and 'neglect' if nothing is done. On the detractor side, there are people like Ruth Jonathan with egalitarian concerns and John White who see identifying the gifted learners as sorting 'sheep and goats' and the need to nurture the gifted being rooted in eugenics. The long-term systematic problem with gifted and talented education appears to be a product of the overall education system.

Before 1997 successive governments had failed to tackle the persistent problem of low attainment in both the urban and rural areas. Only about 30 per cent of city pupils were leaving school with five or more good GCSEs, while 6 per cent were leaving school with no qualifications at all. This was the reality that faced the government in 1997 (http://www.standards.dfes.gov.uk/sie/eic/).

Gifted and talented education in England

In the past there have been generally low expectations at the classroom and school level (DES, 1978; OFSTED 2003) within the English education system and a common belief that more able students can cope by themselves (Eyre, 1997:6; House of Commons 1999, para 43, para 50). Teachers either lacked confidence, the know-how or the enthusiasm to challenge the gifted learners, putting behavioural problems and learning of other students ahead of their needs (Cigman, 2006).

According to Campbell *et al.* (2004) the problematic attitudes towards giftedness can be attributed to the wariness resulting from previous socially differentiated school systems, such as selective schools. The common belief being that by providing special measures for the gifted learners it would be mainly benefiting the affluent and the middle classes and proliferating elitism. This is because parents from higher economic backgrounds tend to be more educated themselves, have more knowledge about the type of schooling they want for their children and have the ability to get what they want because they know how to take the appropriate approaches.

A climate of parental angst from the demanding professional classes for better provision for their children in the mainstream schools and selective secondary schooling has prevailed. A policy change towards giftedness came as a response to a

report published by the House of Commons Education and Employment Committee (1999) which was formed to investigate issues concerning the 'highly able children'. A catalyst for change, the report suggested the following measures:

- funding for gifted children should be included in basic funding for all schools;
- all national initiatives and the Office for Standards in Education (OFSTED) of schools and LEAs (Local Education Authorities) should have a clearly specified target for gifted learners;
- teacher training programmes should make training their teachers to teach gifted children a high priority;
- all schools should have an appointed coordinator for gifted and talented education.

The report further stated that the provisions for gifted students were unsatisfactory in numerous English schools and was of the opinion that these students could not get by on their own and needed guidance. This view was also supported by the Department for Education and Employment (DfEE, 2001) who believed that an operational *national* strategy for the education of the gifted and talented was required; the Department of Education and Skills (DfES, 2002) thus committed itself to including support for gifted and talented learners in all its school education strategies.

The Select Committee Report led to several major grant-funded programmes such as master classes, summer schools, independent/maintained school partnerships and the special EC (Excellence Clusters) strand of the 'Excellence in Cities'(EiC) initiative (DfES, 2002) and the White Paper, *Schools Achieving Success* (DfES, 2001). The EiC initiative came as the first pilot scheme which was followed later by the London Gifted & Talented (LG&T) initiative and finally the National Academy

for Gifted and Talented Youth (NAGTY) initiative was launched to coordinate and lead. These initiatives are discussed below.

2.6.2 Post 1999: government initiatives for gifted and talented education

Excellence in Cities (EiC)

The realisation by the government that the traditional educational methods were not capable of supporting pupils in reaching their full potential lead to the creation of the Excellence in Cities initiative, which was introduced in 1999 and was in effect until 2006 (OFSTED, 2000). Initially it targeted areas of urban deprivation and aimed to raise the standards in maintained schools for disadvantaged pupils. This was later extended to include other areas of under-achievement and poverty.

The EiC programme consisted of seven key strands: support for Gifted and Talented; provision of Learning Mentors to support young people facing barriers to learning; Learning Support Units (LSUs) for pupils who would benefit from time away from the normal classroom; City Learning Centres(CLCs) providing state-of-the-art ICT resources for a small number of schools; Beacon schools (now replaced by the Leading Edge Programme); Specialist schools; and EIC Action Zones enabling small groups of primary and secondary schools to work together to provide local solutions to local problems

The Gifted and Talented strand provided schools with additional resources to support the teaching and learning of the most able pupils (defined as the most able 5-10 per cent of pupils within each school), in order to ensure that these pupils were sufficiently challenged and could fulfil their potential. The EC initiative was the Gifted and Talented strand which was mandated to develop a whole-school policy (discussed later in section 2.6.4.) for the most able pupils in EiC schools.

Substantial amounts of funding were made available first to secondary schools and then to primary schools. Initially, this provision, comprised mostly of extra-curricular activities, was concentrated only at early stages in most schools and summer schools (OFSTED, 2001) and acceleration was used as a strategy to challenge the more able. Later, Learning Mentors were introduced to help schools reduce barriers to learning and to give them an additional resource which could be used to support gifted pupils and enable them to succeed.

When OFSTED reported on Excellence in Cities in 2005 they found provision for gifted and talented pupils was mostly good with some excellent practice and that the initiative had been promoted and developed well in/the large majority of schools they visited (OFSTED 2005). In 2006 EiC funding ended, however by that time most schools, within EiC areas and beyond, had developed strategies for identifying their most able pupils and were beginning to address their needs. From September 2006 all secondary schools were required to indicate which of their pupils were gifted and talented in their School Census return, and to update this each term. This was extended to primary schools in 2007. Schools were also encouraged to register eligible students with NAGTY.

London Gifted & Talented

London Gifted & Talented is a DCFS (Department for Children, Schools and Families) funded organisation which was launched in January 2004. It is part of the London Challenge, an ongoing government initiative to raise aspirations and achievement in London schools of students from early years through to KS4 who have been identified as gifted and talented, or who are in the top 5–10 per cent ability range of their schools. Priority is given to disadvantaged and underachieving students. The

students are connected with specialists and experts in leading academic, cultural and sporting institutions through specially created learning programmes. Master classes, seminars, workshops and online learning activities (referred to as 'pathways') are organised for the students to ensure longer-term impact and learning. The organisation also works with teachers and other educators working in gifted and talented education to create innovative, interactive ways of teaching and learning.

World Class Tests

Part of a broader government initiative which was launched in 2004, World Class Tests is an ongoing international DFCF initiative designed to identify and assess gifted and talented students around the world. World Class Tests in mathematics and problem-solving aimed at upper primary and lower secondary have been trialled by teachers and students in the UK, Australia, New Zealand and the US so that they can be used as a benchmark against which national and international standards can be measured.

The National Academy for Gifted and Talented Youth: NAGTY or the Academy

NAGTY, established in 2002 at Warwick University was a government-funded initiative which offered support to the most able 5 per cent of the school population, teachers and parents. The mandate for this organisation was to develop, promote and support the provision of educational opportunities for high-achieving secondary students in England aged up to 19. It ran weekend courses and summer schools for students in many subjects, at universities and field studies centres across the country, and provided online activities and forums. It was also responsible for leading and coordinating Continuing Professional Development (CPD) for teachers, including a PGCE+ programme and it was involved in research into Gifted and

Talented provision. In 2006 NAGTY took on the co-ordination of the National Register for gifted and talented students. It supplied academic and professional expertise to national policymakers and school practitioners, and acted as a catalyst for developing understanding in the teaching profession.

By August 2007, NAGTY had over 152,000 enrolled members from all areas of England, when the responsibility for the national programme for gifted and talented education was transferred to the CfBT Education Trust (an education consultancy and non-profit organisation), as Warwick University decided not to apply for the new contract. They have renamed the programme Young, Gifted & Talented (YG&T) and established nine excellence hubs, led by higher education institutions, which will focus on outreach provision to gifted and talented learners for example master classes, non-residential summer schools, specialist subject activities and blended/online learning across the school year.

NAGTY is of particular importance to this study. It was the research site from where the sample of gifted and talented learners participating in online discussion forums was drawn from. It is discussed more in detail in Chapter 5. Working with a range of national and regional partners through its professional and student academies, NAGTY led an approach to gifted and talented education based on the English model, which is discussed in the next section.

2.6.3 The English model of gifted education

As mentioned earlier, NAGTY grew out of a recognition by the English government that national leadership in the area of Gifted and Talented was needed in line with its 'personalisation' policy (Leadbetter, 2004; DfES, 2004). The English model is presented as a theoretical model for the personalisation of a universal system, or as a solution to problems and dilemmas identified earlier in Part 1 of this

chapter.. Hence its purpose is to 'flex' the system to make it cope with gifted and talented learners. The system aims to provide the conditions in which giftedness will flourish.

The English model recognises the elusiveness of the term 'giftedness' and chooses to adopt the idea put forward by the Select Committee in 1999 that 5 per cent of the population (~680000) might be considered 'very able', and that 2 per cent (~250000) might be thought of as 'exceptionally able'. As was mentioned earlier, the model is based on the multiple intelligences conceptions promoted by researchers like Guilford (1954), Gardner (1983), Renzulli (1977), Sternberg (1985), Gagné (1994).

By appointing and training gifted and talented coordinators who would help organise a gifted and talented school register with the aid of the subject teachers the first step is to identify the more able students. The coordinator becomes the resource person who helps these teachers to keep track of the students' progress and also to coordinate various enrichment activities like summer schools and outreach events for them. Most schools are encouraged to identify students according to the definitions proposed by EiC definitions (see p. 78)

The model embraces multi-modal assessment for identification based on: teacher recommendation, peer or parental nominations, portfolios of achievement or any such evidence. Provision for the gifted and talented students is considered to be a part of the general education provision; it is an integrated approach to deliver gifted education in England. The students are kept with their peers in their respective schools as much as possible. Whenever and wherever required, necessary provision is outsourced to other institutions to ensure that everyone's needs are met. There are four underlying principles for this integrated provision:

1. *High-quality basic system*: to ensure quality in the mainstream, even though the school remains the core provider, partnerships with other institutions like NAGTY and other providers ensure optimum match between needs and opportunities. This approach intends to raise systemic performance for everyone. Thus in the primary schools, the gifted and talented 5-11 year-olds stay with their peers but are offered opportunities for acceleration or taking exams earlier. In the secondary schools, the gifted and talented 14-19 year-olds also stay with their peers but have personal pathways identified by the school through teacher recommendations to meet individual needs, the objective being to provide specialist provision when appropriate.
2. *Fulfilment of individual potential through diversity of provision (schools, pathways and wider schooling)*: by identifying individual needs with personalised learning pathways, the English model intends to provide diversity through wider schooling – the host school acts as part provider brokering other learning opportunities by other institutions. The intention is to empower the students to influence their own pathways through learning by becoming 'co-producers' rather than consumers (Leadbetter, 2004).
3. *Equality, social justice and meritocracy:* by paying special attention to under-represented groups tracked and identified through school registers, individual gifted students from these groups can be offered access to high-quality opportunities, such as membership of NAGTY. The aim is to make special efforts to include those who come from lower socio-economic or different cultural backgrounds; to help them to realise their full potential by targeted provision and support which enables them to rise through the system.

4. *Globalism:* the English model attempts to recognise the importance of cultivating and nurturing gifted and talented students who are the most likely candidates to become the country's future leaders, able to compete and collaborate with others nationally and internationally, The overall ideology is succinctly summarised below:

> Traditionally gifted education has been seen as divorced from the general education system, yet if a country's education system seeks to provide appropriate education for all its children, then the education of the most able (gifted) should be seen as just one part of a larger whole. This in itself should provide a compelling case for a nationally coherent and integrated approach to the education of the gifted. However there are reasons that transcend education policy that suggest that a country would be well-advised to give gifted education a more central location. Today's gifted pupils are tomorrow's social intellectual economic and cultural leaders and their development cannot be left to chance. Where it is left to chance, evidence indicates that educational progress is not so much a question of intellectual merit but rather a question of affluence, with the most affluent receiving the best education and therefore achieving most highly. (Eyre, 2004:1)

Criticisms of the English model

While seeking to provide for the gifted and talented students' needs, the English model aims to raise standards for all. It attempts to deal with socio-cultural diversity and inequality, but prejudices within the education system show there is still need for further measures. In order for the model to be fully successful, a considerable change in attitudes of educators and policy-makers towards the education of gifted and talented students is needed.

Some believe that gifted programmes are by definition insidious because they perpetuate misleading paradigms of ability, produce uncomfortable distinctions between students and require an unwarranted share of resources (White 2006; Hart *et al.* 2004). Notions of ability are culturally constructed and these programmes tend to proliferate social divisions and inequities (Gillborn, 2005).

White (2006) traces the origins of intelligence theories - propounded by such thinkers as Galton, Burt, Pearson and Goddard - back to early Protestant beliefs in predestination, salvation, the elect and the power of logical thinking. Traditional eugenicist theories of intelligence, with an unbridgeable divide between the innately 'gifted' and the 'feeble minded' - or, in religious terms, the 'saved' and the 'damned' - have largely been discredited, as it has been shown that people can improve their IQ scores with training. It has been argued by some that their legacy remains in the curriculum; these are the very ideas about intelligence that have driven educational policy in the UK and the US. White (2006) draws a parallel between Eyre's (2004) remark that 'today's gifted pupils are tomorrow's social, intellectual, economic and cultural leaders and their development cannot be left to chance' and the Galtonian project of eminent individuals in *Hereditary Genius*. The conviction behind both is that future leaders have to be identified early and nurtured. White links the government's Gifted and Talented initiative with the intelligence theories of Galton, Burt, Terman and others; special attention is being paid to those individuals who are identified as being the most intellectually able even if the intentions are not the same. White further argues that one of the motives here is to get middle-class parents and hence their children back to inner-city maintained secondary schools but the whole system favours children from middle classes. These parents are educated and informed and know how to use league table evidence to their benefit. Their children are also able to cope better with the academic subjects because of the resources their parents can provide them with. White claims that this fosters elitism.

White (2006) also finds the notion of identifying 'potential achievement' in underachieving children from deprived backgrounds problematic; he asks how one can measure potential. He argues that when looking for characteristics for identifying

gifted learners teachers inevitably have to rely on actual achievement and this means that those children who come from affluent and more educated backgrounds get favoured. He goes on to assert that if other subjective measures such as the teacher's own judgement maybe biased because of an underlying awareness of the government's agenda for identifying underachieving children from economically disadvantaged backgrounds. According to White (2006), the rationale behind setting artificial boundaries such as '5-10 per cent' to determine who is gifted is also questionable. White asks us to consider the implications of those children who are very close to these boundaries but get left out but now see themselves as 'not gifted'. He also questions the justification behind all sorts of favourable associations and privileges (such as NAGTY) being given to a small group of students.

White's arguments are typical of criticisms of the supposed social damage fostered by gifted education programmes. I would argue that while gifted education and education as a whole have their own set of fiery issues, including definition, excellence versus elitism, inclusiveness and social justice, it is important to keep focused on what has already been achieved through the government initiatives and further potential possibilities. This is not to deny that elitism and prejudice exist and should be challenged; nor is it to deny that we should acknowledge more ways in which children can be gifted than we tend to at present. It is to say that elitism and prejudice are not, as is often assumed, inevitable corollaries of the concept of giftedness. While the debate continues, within the last decade the increasing awareness of giftedness and the willingness to accept that we as educators have to differentiate for all abilities have slowly led to an change in attitude. It is an understanding that by raising questions about provision for gifted children, provision for other children is not being threatened; it is simply a matter of responding to needs

and entitlements. I agree that the boundaries are blurred and indeed questionable but White's type of mind set which chooses to see only the negative implications seems very closed and thus opposed to change. It might be argued that having missed the cut-off, the students who were close to the boundaries might feel more motivated to aspire higher and 'make it' the next time. Indeed the inspiration might be the 'privileges and favourable associations' being offered. Certainly, it is only by constantly struggling to find appropriate pedagogical and assessment strategies, that it might become possible to recognise 'most' if not 'all' children who have a 'gift' or a 'talent' in 'any' subject; better ways to avoid the pitfalls of labelling children not regarded as gifted. Ways to avoid stereotyping, economic and social segregation are obviously required. These types of shortcomings have already been recognised by many researchers in the field (Winstanley, 2004; Sternberg, 2003; Maker, 2006). According to Winstanley (2004), gifted learners have the same rights as all students; the right to 'equality of challenge', that is, equality of appropriate provision to develop their particular talents and Sternberg (2003) asks, 'What's to be gained by holding them back?'.

The English model shows discrepancies in application, and is still evolving; there are several underlying weaknesses. For example, the model assumes that all teachers should be able to provide for the gifted and talented students in their classes by providing differentiation and employing various methods of teaching (such as using rigorous questioning) when they may not have had any training in this field. It assumes that the gifted and talented students benefit from or prefer to be with their peers of varying ability while research evidence indicates that they have much to gain from peers of similar ability (Gross, 1998; Jesson, 2005).

In the first part of this chapter it was established that the gifted and talented are a diverse group, their range of attainment is varied, that being gifted and talented covers much more than the ability to succeed in tests and examinations and there is no set one way of identifying gifted and talented pupils. The Department for Children, Schools and Families (DCSF) Standards site (http://www.standards.dfes.gov.uk/giftedandtalented/who/) defines gifted and talented children as: 'Those who have one or more abilities developed to a level significantly ahead of their year group (or with the potential to develop these abilities)' (Dec, 2007). It goes on to specify that the term 'gifted' refers to those pupils who are capable of excelling in academic subjects such as English or History and 'talented' refers to those pupils who may excel in areas requiring Visio-spatial skills or practical abilities, such as in games and PE, drama or art. On a similar note, the QCA (Qualifications and Curriculum Authority) defines gifted and talented as: 'those that well exceed the expectations for their age group, either in all subjects or just one'.

The EiC definitions which followed the National Curriculum guidelines for gifted and talented pupils consider students to be 'gifted' if they are in the top 5-10 per cent of the school population in academic subjects and 'talented' if they have exceptional ability in subjects such as music, art or sport (EiC, 2003). However, only those who were in the top *national* 5 per cent were then offered membership in the National Academy for Gifted and Talented Academy (NAGTY), which was the context from which the cases for this study were drawn.

Having two percentages in the system is problematic. It may be that the purpose of the first relative percentage (top 5-10 per cent in schools) is to make *all* schools focus on their upper ability range and raise expectations/aspirations. Targeting gifted and talented at the top 5-10 per cent of pupils in any school,

regardless of the overall ability profile of pupils has its limitations. since it is not gifted and talented in the traditional sense and can result in confusion over terminology and suitable pedagogy. Being 'gifted' and 'talented' in one school is not necessarily a matter of possessing an objective quality which would mark a pupil as being gifted and/or talented in another school. One of the issues that permeates the debate on giftedness is the extent to which it is an inherent quality and the extent to which it arises out of nurturing of one kind or another. If it is nurtured, then it can be argued that the selection of the top 5-10 per cent by teachers will reflect not so much giftedness as a potential but giftedness as an attainment which could arise from all sorts of beneficial circumstances.

The purpose of the second percentage (top national 5 per cent) appears to be to provide advanced educational opportunities for those seen as in need of them. This too has its limitations because of the inexact nature of identification.

The rigidity of the use of the words 'gifted' and 'talented' - being fixed to particular areas of subject content – is also problematic. It may be possible to be a 'gifted' (as opposed to a 'talented') student in music. The EiC definitions fail to take into account cultural diversity, able underachievers, personal and social qualities and skills like leadership and communication. The definitions also imply a degree of similarity between able pupils when in fact they may be the most diverse of individuals in a whole range of ways. The EiC definitions have raised a number of concerns but many schools and LEAs outside EiC have adopted similar criteria. There appears to be substantial room for error and injustice. I concur with Cigman (2006) who points out that the definitions of giftedness currently in use by the UK government are mostly quantitative, ' though it is far from clear how potential as opposed to actual ability is to be measured' (p.199).

Furthermore, the model has some deployment flaws. It was revealed at a workshop I attended at Oxford Brookes University for training gifted and talented coordinators (April 2005) that most coordinators had limited time for the added responsibility of coordinating the gifted and talented register and activities. Although the gifted and talented register has been legislated by the government, many schools had failed to produce one(DfES, 2007). From my own personal experience at schools and in conversations with teachers and heads of departments, it appeared that the gifted and talented register was not a priority, and providing differentiation for the gifted learners in mixed-ability classes was particularly difficult because of lack of time and training. This weakness was also identified in a NAGTY survey (Hewston *et al.* 2005) of school-based gifted and talented coordinators in secondary schools. It was reported that the coordinators had 2-5 additional coordination/management roles which led to a lack of time and support for their gifted and talented role. These issues on top of a general fatigue syndrome associated with ubiquitous educational reforms in schools may have been obstacles in the proper implementation of the role.

According to Campbell *et al.* (2004) there are three significant aspects relating to 'social equity' that challenge the ideology of the model. Consistent with the past, as discussed earlier, it is the professional and middle-class elite groups that are more likely to take advantage of the special provisions made for the gifted learners. Despite the remit of the model to be inclusive it became evident from an analysis of the NAGTY membership (Campbell *et al.* 2004) that it was not. The second point, brought to light by Power *et al.* (2003) (as cited in Campbell *et al.* 2004), is linked to the reaction of the influential elite schools in the independent sector. They have started to specialise in providing services that assure high performance in the national examinations which would possibly ensure places at the more prestigious universities.

To accomplish their goals they have became very selective and keep their class sizes small. This has made it especially difficult for the full implementation of the English model in the mainstream state schools as an increasing number of gifted and talented students have been drawn by these schools. The issue associated with the delivering of national policy is further aggravated by faith-based schools as they may not comply with all the requirements to implement it.

The third point raised by Campbell *et al.* (2004) is concerned with the multi - modal assessment criteria used for identification purposes which include teacher and parental nominations. While these procedures are meant to allow flexibility connected with 'potential' and 'opportunity to develop' they inadvertently favour middle-class parents again. They are the ones who would have the intellectual capital and financial means to make a case for their children. They would have the ability to get services for any sort of preparation that may be needed if any objective measures were to be introduced.

2.6.4 Summary of the provision for gifted and talented education in England

The government initiatives mentioned earlier were driven by the New Labour government's desire for social inclusion. The New Labour approach to gifted and talented education has perhaps served similar political ends to the Conservatives emphasis on grammar schools in terms of social mobility. Labour needs to pay attention to gifted and talented in comprehensives to show it is thinking about people 'rising by their talents' . Tony Blair articulated this idea in the following manner:

> We believe that people should be able to rise by their talents, not by their birth or advantages of privilege. We understand that people are not all born into equal circumstances, so one role of state education is to open up opportunities for all, regardless of their background. This means we need to provide high standards of basics for all, but also recognise the different abilities of different children, and tailor education to meet their needs and develop their potential.
> (Tony Blair, 1996 as cited in Eyre, 2004)

The strengths of the English model lie in that it asks teachers to broaden their sense of what achievement and attainment means in their classrooms. While it may not have been fully accomplished, the English model advocates and has *tried* to be comprehensive (participation in a gifted and talented activity (e.g. in class) is not always contingent upon being identified so enables the revealing of ability) and is available for all ages and all groups as an educational entitlement encompassed within the education system. Overly ambitious to change the entire system (all teachers, different levels of programming occurring both in and out of school and advanced provision in a wide range of domains for all ages) the English model often falls short in providing the right 'conditions'.

The English model for gifted and talented education is an ambitious approach which challenges the notion of the school as a single education provider and is embedded in high aspirations. The weakness of the English model is not just in its implementation but in its muddled conception. While the shortcomings of the approach still need to be addressed, Eyre (2004) asserts that 'the potential offered by this kind of approach is considerable' (p.4) as it is a relatively economical option which can help enhance standards in education for all. It is because the English model does not have a tight definition of gifted and talented children, because it advocates keeping them in normal classes that the provision of external support as is provided by NAGTY is an excellent solution – and within that, online support is one strategy that is important.

2.7 Conclusion

In this chapter the current literature on gifted and talented learners has been reviewed. First the ambiguous nature of what it means to be gifted and talented was discussed and then the methods used to identify learners who may be considered gifted and talented. Next, the characteristics and needs that are associated with gifted learners were examined and the strategies that may be used to meet them were discussed. Further, the UK government initiatives that have been launched in the past two decades in an effort to meet the needs of gifted learners were discussed. Finally, the English model for gifted education which is currently functional in most English schools and is fundamental to the identification of the gifted and talented learners for this research was presented.

The English model has been reasonably successful in bringing to attention those children who obviously need challenge to keep them motivated. In 2003, OFSTED reported inadequate provision for gifted and talented students in approximately 10 per cent of the schools and just under 50 per cent good or better provision (OFSTED, 2003: para 108). However in 2005 there was evidence that provision for gifted and talented students was mostly good with some excellent practice and that this initiative had been promoted and developed well in the large majority of schools they visited (OFSTED, 2005). The commitments outlined in the education White Paper (DfES, 2005) *Higher Standards, Better Schools for All* included: a trained 'leading' teacher for gifted and talented education in every secondary school and for clusters of primary schools; improved identification and tracking of gifted and talented pupils' attainment and performance through a new National Register; a new national programme of extended day non-residential summer schools developed through partnership between higher education institutions and

specialist schools; up to £1 million (plus match funding) to be targeted towards vulnerable gifted and talented learners; development of tools and guidance to help schools to more effectively identify; teach and support gifted and talented learners from black and minority ethnic backgrounds. From September 2006, all secondary schools were required to indicate which of their pupils were gifted and talented in their School Census return, and to update this each term. This was extended to primary schools in 2007. Schools were also encouraged to register eligible students (top 5 per cent) with NAGTY.

It is questionable whether the English model itself is the right direction for gifted and talented education or whether it is utopian and the old gifted and talented programmes as in the USA are better models. It all depends on what each type of model wants to achieve for the gifted and talented learners and what the government wants to achieve ultimately. While England has certainly taken the initiative by changing policy in order to accommodate those that require special attention at the upper end of the spectrum I feel that there is still much more work to be done. In order to reach out to all the under-privileged gifted learners from ethnic minorities a considerable increase in funding is required for goals that have been outlined to be realised. The 2005 White Paper emphasised that more able pupils from disadvantaged backgrounds should have particular support and made it clear that:

> ...the Government's ambition is that every pupil, gifted and talented, struggling or average should have the right personalised support to reach the limits of their capability. *For gifted and talented pupils, this means better stretch and challenge in every classroom and in every school with opportunities to further their particular talents outside school at a local and national level.* [1] (DfES, 2005)

Like any other learners, the gifted and talented children need a challenging education which is constant and dependable. By providing these learners with high-

level learning opportunities, their chances to develop to their fullest potential are increased manifold. Instead of giving general enrichment without any particular focus, specific provision within subject areas would appear to be the most favourable option since it would accommodate the varying ability levels for different areas. Freeman (1998) suggests that 'with specific provision (scaffolding) and mediation (adult guidance, especially through language) children can learn at a far greater speed than otherwise' (p.4). She adds that leisure activities of gifted learners have been found to be a reliable predictor of future high achievement in the areas they had support (Feuerstein and Tannenbaum, 1993; Renzulli, 1995; Hany, 1997 as cited in Freeman, 1998). If we assume that leisure activities are what these learners would engage in mostly outside of school in their own time, this may include the use of technology to learn more about intriguing subjects. By communicating with others who have similar fascination in that area, in an online community, it might be possible to provide a structured yet flexible learning environment; a place to cultivate individual interests and develop communication and interpersonal skills.

The National Centre for Technology in Education (NCTE), an Irish Government agency established to provide advice, support and information on the use of ICT in education advocate this kind of environment:

> ICT can be used as a vehicle to promote communication skills in a number of ways. Some students with exceptional abilities can have difficulty relating to their peers for a variety of reasons. *Collaborative-learning environments, using ICT, can promote communication and develop interpersonal skills. Furthermore, ICT can enable gifted students to communicate with students of similar abilities and interests through using email or on-line discussion groups.*[1] (NCTE, 1998)

[1] Italics mine

If such online collaborative learning environments were to be provided for gifted learners, it might well be one way of enhancing already existing school methods for meeting their needs. Since gifted children are generally more goal directed, tend to show traits of task commitment, exhibit intellectual abilities, persistence and motivation (Clark, 2002; Davies,2001; Dyson, 2003; Renzulli, 1977; Renzulli and Reis, 1997; Terman and Oden, 1947) they would most likely gain much from such environments. Given the opportunity, and with some guidance, they would be able to select work in any subject at a more advanced and broader level.

The NAGTY Student Academy was given a licence to do things differently; the structure of the Student Academy provided the context and the place (in my case, a 'virtual place') for learning differently. The English model provided the theoretical out-of-hours pedagogy such that learning in the Student Academy was not constrained by school convention, courses or ways of working. Instead by pushing the boundaries of learning and making the most of the students' ability to learn – together – from others – formally and informally. Keeping this in mind, the next chapter conceptualises the use of this e-learning strategy in the form of asynchronous discussion forums in an online community as a possible pedagogy to engage gifted learners in informal learning.

CHAPTER 3

Asynchronous Discussion Forums and Gifted and Talented Learners

3.1 Chapter overview

The fields of gifted education and e-learning demand extensive research in their respective domains. This chapter and the previous one are therefore not exhaustive reviews of the related literature, but selective, setting a context for this study and explaining the origins of, and rationale for, the research questions presented later in Chapter 5. Narrowing in on one of the strategies discussed in Chapter 2 to meet the needs of gifted and talented learners, I draw upon relevant aspects of e-learning literature (asynchronous discussion forums) to develop an argument for the importance of research into gifted pupils' use of these forums as an out-of-school support in a community of inquiry.

First, the growing role of ICT and e-learning in education is introduced by broadly defining ICT and e-learning and related terms, bringing the focus onto asynchronous online discussion forums as a form of computer-mediated communication and the role it plays as a facilitating tool for collaboration. Next, the chapter dwells on what literature tells us about how gifted and talented students learn in an online environment and how online discussion forums might have the potential to encourage the development of the higher order thinking skills and social behaviors needed. The taxonomy of educational objectives (Bloom *et al.* 1956; Krathwohl *et al.* 1964), which categorises cognitive and affective learning skills as progressing from lower to higher stages, is introduced in order to identify and discuss the higher level of skills generally associated with gifted and talented students. Finally, an online community of inquiry is conceptualised as a possible online pedagogy that might be employed to enhance the chances of gifted children realising their full potential.

3.2 E-learning and related ICT

Becta (British Educational Communications and Technology Agency) advocates the use of e-learning to provide more flexible approaches in supporting gifted and talented children both in and out of school in their education, to improve their social communication and to assist with their relationships with others. While ICT can help address specific aptitudes in children – for example acceleration – by the use of individual learning systems it would be wrong to claim that e-learning is the panacea to the needs of every gifted and talented pupil. It is merely another strategy to address the wide-ranging needs of this group (Prain and Lyons, 2000).

E-learning – sometimes referred to as online learning, web-based learning, distance learning or technology-based learning, among other names – is a very broad concept which encompasses under its umbrella a wide range of personal productivity software, Windows environments, local area networks, client server computing, internets, intranets, extranets, personal digital assistants (PDA) and mobile and wireless technologies. These technological advances have enabled electronic commerce systems, any time, anywhere data retrieval and updating, education, professional development and the rapid growth of e-learning (Close *et al.* 2000; Gotschall, 2000; Webster and Hackley, 1997; Wentling *et al.* 2002). Transcending time and space, e-learning has the potential to make available to online learners a whole range of worldwide resources with its communicative and interactive features which can provide both independence and collaborative opportunities (Garrison and Anderson, 2003). One of the many definitions which attempts to catch all the different functions associated with e-learning is given by the Masie Center (an international learning lab and think tank dedicated to exploring the intersection of

learning and technology) as the use of technology to manage, design, deliver, select, transact, coach, support and extend learning of all kinds.

Since the mid-1990s, the UK government has recognised the importance of e-learning in education. The growing Internet use and personal computing technologies have also spun the education sector into exploring potential opportunities for flexible and accessible learning. Becta (2003) reported findings from a survey (*Young People and ICT 2002*) that 98 per cent of young people aged 5-18 used computers either at home, school or elsewhere. ImpacT2 (Comber *et al.* 2000) found that the amount of time per week spent using a computer in any location for those in Key Stage 3 and above was 11.5 hours, of which 3.5 hours were spent playing games. Similar sorts of research carried out in the last decade into children's use of ICT in the home (Facer *et al.* 2003; Somekh and Mavers, 2003; Sutherland, 1997) also showed that ICT play multiple roles in children's lives and how fundamental this has become for them in their daily activities.

Barr (1990) described the role of technology in educational reform as achieving five goals which would make learning more independent, individualised, interactive, interdisciplinary and intuitive. Almost 18 years later these five goals are still the same. Literature indicates that although educational reform due to the use of ICT has been slow it is gradually beginning to have an impact (Barr, 1990; Collins, 1991; Eyre, 2003; Somekh and Mavers, 2003; Young, 2003). Other studies (Becta, 2003; Comber *et al.* 2000) have claimed that ICT may afford greater motivation, greater productivity, greater attainment, greater connectivity and, most importantly, greater enjoyment for nearly all children. These claims, however, have mostly been quite equivocal. Thus far there is limited evaluative and effectiveness research into how technologies can be used to enhance individual learning experiences for different

learners (Farrell, 2003:24: Oliver and Dempster, 2002:1). There is, however, growing indication that this gap is increasingly being recognised and addressed through pedagogical, technological and organisational research (Conole, 2004:2).

According to a recent Becta report by Stephen Downes on *Learning networks in practice* (2007), e-learning has emerged from being a revolutionary idea to something that is now considered quite normal. However, the changing nature of the Internet is bringing about an evolution in e-learning so much so that it warrants a new name: a second wave of applications and approaches drawing on what has come to be described as Web 2.0 technologies in education, which has brought about what is now called e-learning 2.0. This second wave is characterised by the 'personal learning environment'. According to Downes (Online *E-Learn Magazine* Education and Technology in Perspective), 'the values that underlie the personal learning environment and Web 2.0 are the same: the fostering of social networks and communities, the emphasis on creation rather than consumption, and the decentralisation of content and control'. The idea behind the personal learning environment is that the focus of learning shifts from the institution to the learner. Learning, in other words, occurs in communities, where the practice of learning is the participation in the community.

> A learning activity is, in essence, a conversation undertaken between the learner and other members of the community. This conversation, in the Web 2.0 era, consists not only of words but of images, video, multimedia and more. This conversation forms a rich tapestry of resources, dynamic and interconnected, created not only by experts, but by all members of the community, including learners. (Downes, 2007:20)

The use of such learning environments may be able to provide educators with the prospect to create learning opportunities that are sufficiently complex to engage a full range of learning styles and abilities. It could be that there are benefits here for

talented and gifted learners, but little of this has been systematically explored as yet; especially the challenge of understanding the increased usage of e-learning both at home and school. In an effort to make such a contribution to research, this study explores the possible use of asynchronous online discussion forums as a form of out-of-school support for gifted learners. As communication tools the forums characterise Web 2.0 as they support direct interaction between individuals, providing them with a means of interacting with one or more members of a network or community. Online interactions are seen as a means of promoting communication and collaboration between e-learning participants and have lead to a growing interest by the academic community in the pedagogical value of such tools (Corich *et al.* 2004).

> The potential of computer conferencing as a flexible, innovative form of networked learning was signalled in the literature several years ago and since then it has become mainstream pedagogic practice in many tertiary settings. Online units now incorporate discussion forums, list serv(e)s and bulletin boards as learning spaces, where students can engage in collaborative networked learning. (McLoughlin and Luca, 2006:1)

The next section describes the use of computer-mediated communication (CMC) tools, highlighting both synchronous and asynchronous discussion forums as different forms of online interactions or forms of computer conferencing.

3.3 Computer-mediated communication (CMC)

CMC refers to any form of exchange across two or more networked computers; communications that occur via computer-mediated formats between two or more individuals. CMC systems allow groups to interact without having to be present at the same time or in the same geographical location. They support group learning as the structure of a discussion is maintained in a coherent mode without the

user needing to do anything (Haythornthwaite and Wellman, 2002; Herring, 2004; Walther, 1996).

Although definitions of CMC vary, most include email, chat, computer conferencing and access to information through online databases (Thurlow *et al.* 2004). Computer conferencing refers to the use of a web-based application that enables participants to create and edit messages that are stored in an area that is accessible to group members and that organises messages into 'threads' of conversations. A thread is a hierarchical arrangement of linked notes in which each successive contribution is written as a response to an earlier note in the discussion or completely new suggestions are made which invite further contributions. At any one time in a computer conference there may be dozens of different threads at various stages of maturity. Some will be just starting, some mid-way and others will have reached an end. Below are some examples of different types of computer conferencing or communication tools.

3.3.1 Asynchronous discussion forums or message boards

Asynchronous communication is a type of two-way communication that occurs with a time delay, allowing participants to respond at their own convenience. Messages are displayed on electronic bulletin or message boards as 'threads' organised according to subject referents and allow the history of the online conversation to be followed easily. They are called asynchronous because of the lag that exists between posting and receiving a message to the group's server computer as users are not required to be present at the same time. This allows users more flexibility with time and location. Some examples of asynchronous computer-conferencing systems are Lotus Notes/Domino, FirstClass, TopClass and WebBoard (Haythornthwaite and Wellman, 2002; Herring, 2004: Walther, 1996).

3.3.2 Synchronous chat groups

This form of computer conferencing or messaging most resembles people talking to each other. It is possible to chat to many people at the same time and/or individually: you can choose who you want to communicate with. Members can communicate instantaneously as there is no lag between posting and receiving a message. Users can connect to a chat site or room and 'chat' with other members by typing short messages almost as quickly as they are sent. They are required to be present at the same time. Just like in a face-to-face discussion, which unless it is taped leaves no record, once the conversation window is closed and unless one makes the effort to save the exchange made, there is no record left of it.

Individual and Communal Weblogs, social network sites (Classmates.com, Hi5.com, MySpaces.com, Facebook.com), list-servs (Google,Yahoo or MSN Groups) blended and mobile device-based groups are all examples of online communities where readers can use asynchronous or synchronous computer conferencing to share their interests, and to have a place to voice their opinions.

Comparing asynchronous and synchronous discussion, Bhattacharya (1999) found that learners preferred asynchronous discussion because it gave them an opportunity to read and craft responses and to reflect and be better able to think critically before responding. Asynchronous discussion allows for reflective thought and 'talk', components valued in effective discussion. These same components make asynchronous discussion more viable than synchronous discussion in fostering higher order thinking, social construction of meaning and reflection (Collison *et al.* 2000; Davidson-Shivers *et al.* 2000; Lapadat, 2000).

The above section introduced broadly two different forms of communication tools used in computer conferencing. The next section discusses asynchronous discussion forums in more detail as they are the focus of this study.

3.4 Asynchronous online discussion forums (AODFs)

This section first explores the potential role of AODFs as devices that can encourage collaboration between participants in an online environment (Section 3.4.1) and then discusses why their use, along with other related ICT, may be particularly valuable for gifted and talented learners (Section 3.4.2). This is then followed by a discussion about the way gifted learners 'learn' and how the properties of AODFs may help to support their needs (Section 3.4.3). All these sections are then brought together in a summary (Section 3.4.4).

3.4.1 Collaborative tools in e-learning

Collaboration in an online discussion forum takes place through the mediation of technology. The participants could be regarded as a community of learners, all at various stages of technical expertise. The medium of computer conferencing provides a potential platform that may foster dialogue, debate and conversational learning where learners move through the cycle of experiencing, reflecting, abstracting and acting, as they construct meaning from their experiences in conversations (Baker *et al.* 2002). This may allow the learners to gain a sense of community with access to other students' thoughts and ideas, a place where participants can reach out for support (Garrison, 1993; Mason and Kaye, 1990). Hiltz (1990) maintains that discussion forums provide a mechanism that allows the social (affective) and cognitive benefits of face-to-face situations to be duplicated.

Based on face-to-face interactions, Curtis and Lawson (2001:26) cite Johnson and Johnson (1996) who provide the following list of major types of behaviours in collaborative-learning situations:

- giving and receiving help and assistance;
- exchanging resources and information;
- explaining and elaborating information;
- sharing existing knowledge with others;
- giving and receiving feedback;
- challenging others' contributions (cognitive conflict and controversy leading to negotiation and resolution);
- advocating increased effort and perseverance among peers;
- engaging in small group skills;
- monitoring each other's efforts and contributions.

In their analysis of students' contributions to online discussions Curtis and Lawson found evidence of most of the above behaviours of collaboration. McLoughlin and Luca (2006) describe collaborative-learning behaviours such as giving and receiving help and feedback, positive social interdependence. These behaviours, they argue encourage reflection on progress and process. On a similar note, Harasim (1989) claims that 'online interactions can help to produce collaborative-learning environments in which information and perspectives are constantly being shared' (p.52).

AODFs can therefore potentially provide a medium that fosters collaboration, reflective thinking and flexibility of time and space for learning with a tendency to keep the participants motivated (Bates, 1995; Garrison,1993; Harasim *et al.* 1995;

Kanuka and Anderson,1998). These features may offer fertile grounds for building a community of gifted learners who could possibly support and learn from each other.

3.4.2 Gifted and talented learners and AODFs

While it is true that AODFs can be powerful communication learning tools for all learners, the potential to enhance the education of gifted students is particularly appealing. Studies have shown that gifted children enjoy and use computers differently (Bowen *et al.* 1992; Singh, 1992). One of the goals in the education of gifted children is to help them develop decision-making skills and to foster independent learning. The computer presents information, asks questions and verifies responses in much the same way a teacher does. However, unlike traditional means of instruction technology it allows students to work at their own level and pace. This mode of instruction can be especially beneficial to gifted students who often have interests and abilities that go beyond the scope of the regular curriculum. Intrinsic characteristics of giftedness such as task commitment, above average ability and creativity (Renzulli, 1978, 1986), being able to generalise and make intuitive links, curiosity and persistence might well help gifted and talented learners make more efficient use of ICT than regular learners. These qualities can be very beneficial in self-directed learning. Ng and Nicholas (2007) contend that 'the desire to extend learning and the capacity to self-direct their own learning are characteristics that resonate well with gifted students' (p.2).

3.4.3 Supporting the needs of gifted learners by using AODFs

Munro (2005) claims that the learning characteristics of gifted learners are particularly suited to online environments such as asynchronous online discussion forums. According to Munro, who bases his claims on a developmental psychology

framework that identifies how gifted students learn, gifted learners are curious, good at questioning and learn well by having their knowledge challenged. They use self-regulatory strategies such as defining, focusing, persisting, guiding, coping, correcting, reinforcing and solving. Rather than being 'programmed' (Munro, 2005) to think, it is useful for them to reflect on how they went about learning. By regulating their own learning and performance they can become responsible self-directed learners.

From a synthesis of studies in cognitive and developmental psychology Pelletier and Shore (2003), cited in Shore and Irving, 2005, discovered that highly able learners, like experts, utilise knowledge from previous experiences, self-monitor and self-reflect. Another study by Coleman and Shore (1991, as cited in Shore and Irving (2005:5), also found similar evidence: 'highly able students are able to draw more extensively and effectively on prior learning, to make more references to pre-existing knowledge, and to present accurate appraisals of their own pre-existing knowledge base'. So gifted learners are able to make links with and build on whatever knowledge they already possess. Munro (2005) cites Heller (1971) who iterates this view by saying that once the gifted learners have learnt a concept they utilise it more extensively.

The above learning qualities of gifted learners seem to resonate well with the properties of AODFs. As mentioned earlier, the collaborative nature of the discussions fosters self-reflection, inquiry, feedback and collaboration with mentors or groups. Self-pacing and self-selection of higher-level cognitive abilities such as exploration, discovery, analysis and synthesis is encouraged by the environment because of the vast databases that can be accessed online. The need to work independently and to self-pace their own learning is accommodated by the AODFs by

allowing them to develop their innate learning preferences of self-motivation, self-direction and self-monitoring.

While the worldwide web may potentially eliminate gatekeepers of knowledge (teachers) and allow more autonomy, the need for gifted learners to have some structure along with flexibility (Feldhusen, 1998) may be met by the presence of facilitators or experts on the AODFs. It may be possible for the learners to get the necessary direction, the chance to ask questions that may lead them to a better understanding of what is available and may also help them to make informed decisions.

The sense of audience the online community offers along with a non-judgemental risk-free environment may give a chance for some gifted learners to become more self-confident. The company of like-minded peers may provide them with the opportunity to present their ideas, to express their interests and discuss them without the fear of being labelled as 'nerds'. It may provide them with room to mature, to become comfortable with their 'gifts' and 'talents' without feeling that they are social misfits. This study explored the participation of gifted learners in AODFs in order to find out if there was any evidence of all the above-mentioned possibilities.

As was mentioned earlier, gifted learners possess the ability to interconnect prior knowledge with newly acquired knowledge (Munro, 2005; Resnick, 1987). Sternberg (1985) in his *Triarchic Theory of Human Intelligence*, identified the ability to plan, monitor and evaluate their own thinking and performance as one of three key factors which distinguish the thinking of gifted learners. These types of learning abilities are seen as higher order thinking skills (HOTS) or critical thinking skills

which need to be developed. Higher order thinking skills according to Lipman (2003) and Paul (1993) include:

- having metacognitive awareness;
- having problem-solving capabilities;
- having the capacity to be an autonomous thinker and make reasoned judgements;
- having the ability to evaluate by using a critical stance.

Garrison (2003) claims that 'the dimensions of higher order learning emerge from the concepts of reflective inquiry, self-direction and metacognition' (p.1) which are compatible with the *asynchronous* and *connectivity* properties of online learning.

For AODFs to be valuable for gifted learners, presumably they should be providing opportunities for students to engage with each other and with material at the upper ends of the spectrum of learning and thinking skills.

3.4.4 Summary

Collaborative-learning in an AODFs context is essentially a social and interactive process, located in the context and socio-cognitive processes of interaction where learners construct and reconstruct their world as technology provides them with the chance of looking at conversations repeatedly (Laurillard, 1995). Peer collaboration, review of concepts and discussions through sharing of ideas in technology-mediated environments have been found to facilitate forms of reasoning and higher order cognition (Wegerif *et al.* 1997; Crook, 1994 as cited in McLoughlin and Luca, 2000). Wertsch (1985) also contends that higher mental functions, such as abstract reasoning, are characterised by the individual's increasing control over these processes, and conscious awareness of how to apply them. When the learners see their peers and tutors model the process of interpretation and application, they are

then able to analyse and compare their own understanding to that of others (McKendree *et al.* 1998). Sharing and reflecting on their own experiences and those of others aids the learner to move from novice to expert by building understanding.

Socio-cognitive language-based operations such as generalising, hypothesising and inferring are possible in social settings where language is used to communicate ideas through the processes of thinking and learning. The emphasis on learning as socially grounded is particularly relevant to computer-conferencing transactions where 'learning has a social quality by virtue of its relation to practices of interpersonal exchange, participating in relevant discourse and joint activity' (Crook, 1994:74).

Other researchers who have studied the AODFs have reported findings that have indicated that they facilitate the acquisition of higher order thinking skills, make learners more proficient at transferring and applying information to a novel situation (Larkin-Hein, 2001) and promote high levels of cognitive engagement and critical thinking (Thomas, 2002). Learning how to process information, to learn, to communicate well and to articulate are life-long skills. Gifted learners' ability to get a broader synthetic view by making connections with things already learnt enables them to acquire these life-long skills more easily and helps them to meet the need to work intuitively, creatively and become effective leaders.

The asynchronous and connectivity properties of AODFs which promote collaboration, reflective inquiry and self-direction seem to resonate well with the distinctive needs of gifted and talented learners. One way of bringing the two together may be to conceptualise a way that employs these properties to engage gifted learners in an online community of inquiry.

3.5 Conceptualising AODFs as communities of inquiry for gifted learners: an online pedagogy

To help conceptualise AODFs as communities of inquiry, it is important to understand how an online community of inquiry functions. This section discusses this in (Section 3.5.1) and then why such a community may be useful for gifted learners (Section 3.5.2).

3.5.1 An online community of inquiry

The term 'virtual community' was first used by Howard Rheingold in his book *The Virtual Community* (1993). According to him, a virtual/online community can be regarded as a group of people primarily or initially communicating or interacting with each other by means of information technologies, typically over the Internet, rather than in person. Rheingold (1993) also revealed that several of these virtual communities are closely knit communities embodying a rich culture online, exchanging everything from scientific data to sexual fantasies, child-rearing tips and free-ranging political opinions. Regardless of age there is a group of online people who have something in common that binds them.

The virtual community of gifted learners that this study focuses on will be considered a virtual community of inquiry. The key description of a community of inquiry (a term presumably first coined by Charles Peirce to refer to the interaction among scientists (Lipman, 2003:20) refers to a group (social setting) of individuals who use dialogue to seek solutions to puzzling concepts. This study's group of gifted and talented learners use online discussions forums (dialogue) to arrive at possible solutions to questions.

Mathew Lipman developed the model of community of philosophical inquiry in 1970, based on Dewey's ideas (1933) of communal inquiry and Peirce's notion of

scientific community of inquiry. The main goal of this dialogically and inquiry-driven community is the co-construction of meaning and the formation of concepts, by building on each other's ideas. Lipman (2003) suggests that Vygotsky's concept of the intrapersonal appropriation of the interpersonal or 'internalisation' is evident in a community of inquiry (COI) in the development of habits of both cognitive and behavioural self-control and self-regulation. The COI mediates continuous advancement in knowledge as the process of internalisation-externalisation - further internalisation repeats itself in the communal discourse. Thus, inquiry-based learning is often described as a cyclic or an evolving process in which there is the triggering of a question, exploration, creation of a possible solution, further discussion and reflection on the outcome (Bishop *et al.* 2004). As Peirce[2] suggests, 'one man's experience is nothing, if it stands alone .... It is not "my" experience, but "our" experience that has to be thought of; and this "us" has indefinite possibilities'. The basic assumption in the use of a community of inquiry is the generalised acceptance of its indispensable role in the construction of knowledge and in the organisation of experience.

According to Shore and Kanevsky (1993) the ultimate achievement of a COI as a pedagogical system is to move not only the individual but the whole group through the process of inquiry in which the students co-construct knowledge. This can be done by encouraging the students to participate by asking questions (an ability that gifted learners are thought to already have), by getting them to suggest ways for

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[2]Peirce, 'How to make our Ideas Clear', in *Collected Papers* (5.402, footnote 2, added in 1893): "When we come to study the great principle of continuity and see how all is fluid and every point directly partakes the being of every other, it will appear that individualism and falsity are one and the same. Meantime, we know that man is not whole as long as he is single, that he is essentially a possible member of society. Especially, one man's experience is nothing, if it stands alone. If he sees what others cannot, we call it hallucination. It is not 'my' experience, but 'our' experience that has to be thought of; and this 'us' has indefinite possibilities."

the process of investigation and by sharing their results. The facilitator's role changes from one who provides the content to one who keeps the learner engaged in the process of inquiry by asking leading questions and focusing on meaningful understanding. The process of inquiry is emphasised so that the students can learn to direct their own learning. This would become evident as they begin to ask appropriate questions, reflect on their answers, start to hypothesise and contemplate on explanations. The community of inquiry can be likened to an educational community since it helps to develop and enrich personal and collective experiences, where knowledge is not transmitted but built. Integral to the workings of a COI is critical thinking (higher order thinking skills) and commitment to respect for all other community members.

3.5.2 Conceptualising a community of inquiry for gifted learners

Could participation in the AODFs produce such a community of inquiry where gifted learners might learn the process of inquiry so that they may develop their higher order thinking skills to become autonomous learners which could then empower them for the rest of their lives? According to Garrison (2003), this is certainly possible:

> True communities of inquiry are possible through collaborative and reflective communication. The goal is independent thinkers nurtured in an inter-dependent collaborative community of inquiry. This speaks directly to the properties of asynchronous online learning. (Garrison 2003:2)

This type of community might be able to provide gifted learners with the space, the direction needed, the mentors or experts who can facilitate their progress, a semi-structured environment which nurtures their characteristics (perseverance, creativity, curiosity), a place where they can turn for emotional support, technical information, intellectual discussions, or for socializing. Belonging to and

participating in such a community may also help motivate underachieving gifted and talented students, who are afraid to show their interests in class because of the social stigma it may cause. Providing these students with a place where they can network anonymously with others like them or with those with higher ability may encourage the students to perceive themselves as more 'normal'.

3.6 Conclusion

There is an increasing consensus among evangelists for the gifted cause that one way forward to meet the various needs of gifted learners is the increased integration of computers or related technologies in and out of the classroom (Bowen *et al.* 1992; Eyre, 2003; Gallagher, 2002; Nugent, 2001; Shaughnessy *et al.* 1997; Strommen, 2003; Van Tassel-Baska, 2000; Wilson, 2000).

Educational technology can serve to make learning more enriched, valid, individualised, accessible and economical (Hackberth, 1986). It can be utilised to process information, to communicate and to make informed decisions. As a 'productivity tool' (Jonnasen, 2000) the computer and other related technologies can eliminate the more mundane aspects of the-learning process which causes gifted students to lose interest. It allows them to focus their efforts and attentions on the important concepts to be learned (Morgan, 1993). In this way ICT can be seen as an essential tool for the education of the gifted and supportive of their needs.

The National Centre for Technology in Education, which was established under the auspices of the Department of Education and Science in 1998, claims that in school, used as a tool in a structured but flexible-learning environment, ICT have the potential to address the general needs of gifted students by providing them with opportunity to:

- have a learner-centred rather than a teacher-centred environment;
- explore topics at a greater depth and breadth;
- progress at a rate that is appropriate to their abilities (flexibility);
- develop and practise higher-level thinking;
- work individually or in small-group investigations;
- use e-learning programs to communicate with experts in their chosen areas of interest (networking);
- be original and innovative, and become responsible learners.

While some of these activities may be more school based (games, simulations, drill and practice tutorials, others, for example, the networking capability of ICT, may be extended to out-of-school usage. By becoming members of an online community of gifted learners and participating in AODFs, connections can be established with other gifted learners. Here, they may be able to find further support, challenge and a place which could provide them with direction to pursue personal interests to a depth they choose. Studies have shown that gifted students, more often than their peers, feel deprived of academic challenge in the classroom and leave school (Strom *et al.* 1994). This could be because the gifted child feels alienated from his or her peers, and as a result is constantly struggling to 'fit in' with the norm. Even when this is accomplished by hiding their true potential or by turning off, feelings of frustration and loneliness prevail. This could be partly attributed to adolescence, a period of hormonal imbalance and restlessness for most teenagers.

Research has also indicated that grouping gifted students produces positive effects (Gross, 1998; Jesson, 2005; Kulik and Kulik, 1982, 1984). Building on the e-learning strategy for meeting the individual needs of gifted learners, an online pedagogy based on creating a community of inquiry through participation in

asynchronous online discussion forums was proposed. It was suggested that the properties of asynchronicity and connectivity of AODFs might have the potential to create a unique environment or community such that by participating self-directed gifted learners, with some guidance from experts or mentors in their interest domains, might become empowered to become life-long learners.

In order to substantiate this suggestion, this research undertook to explore the communications and interactions that took place in such an environment to see if there was any potential for a community of inquiry, to meet some of the needs of gifted and talented learners. The automatically created archives of online interactions made it possible to carry out an in-depth analysis to enable us to understand online learning (Harasim *et al.* 1995). Challenging questions about the mechanics of the text-based exchanges could be asked, for example, What constitutes a learning experience?, What makes a computer conference more conducive to knowledge construction?, What keeps the participants motivated? and How are self-directed learning skills such as interpretation of ideas and problem- solving learnt (Candy, 1991, Harasim *et al.* 1995; Laurillard, 1995)?

> If we are going to be able to define and appropriate differentiated pedagogy for bright students, then educational researchers and practitioners need to understand if and how these pupils think differently from others.
>
> (Shore and Kanevsky, 1993:140).

In an effort to conceptualise an online pedagogy for gifted learners this study asked similar types of questions by analysing the online interactions of an online gifted community: What potential did an community of inquiry hold for gifted learners?, Was it possible for them to acquire higher order thinking skills - the ability to synthesise, analyse and evaluate - by participating in an online community?, Was it

possible for the gifted learners to find support for their social needs within such an environment?

To operationalise this exploration and to find out if AODFs could indeed provide the above-mentioned opportunities, and to what extent, a conceptual tool was developed for the content analysis of the archived messages which is described in the next chapter. It outlines the community of inquiry model as visualised by Garrison *et al.* (2000) for online learning experiences and then explains how this model was modified to include the hierarchical stages of the cognitive and affective domains of Bloom *et al.*'s (1956) and Krathwohl *et al.*'s (1964) models in the taxonomy of educational objectives to develop appropriate coding templates for the analysis of this study.

CHAPTER 4

Development of a Conceptual Framework

4.1 Chapter overview

The last two literature reviews (Chapters 2 and 3) have attempted to establish two things: first, that there is a need for gifted learners to get additional provision for their diverse needs; second, that the properties of AODF which seem to support some of the learning characteristics of gifted learners might be an additional way of supporting them through an online community of inquiry.

The overarching research question underpinning this study is: What is the potential of asynchronous online discussion forums in promoting a community of inquiry for gifted and talented learners such that the community is able to meet some of their social and intellectual needs? In order to investigate this potential the study poses the questions: What does participation look like in the realisation of a community of inquiry for gifted and talented learners? and What evidence is there that the students participating in an online community of inquiry develop higher order thinking skills?

The goal of this final literature review chapter is to demonstrate how the appropriate conceptual framework was developed to facilitate this investigation. It begins by introducing various content analysis models (Section 4.2) that have been used for analysing online messages and were influential in the decision in choosing, the community of inquiry model (Garrison *et al.* 2000, 2003) as the primary analytic lens for this study. This model conceptualises meaningful online learning or experience as an interaction of three main elements: social presence, cognitive presence and teacher presence. Each of these elements are discussed in detail in turn: what each element means; how it is relevant to the needs of gifted and talented

learners; the categories represented on the community of inquiry template for coding purposes, followed by the template itself.

Thereafter a description of a three-month pilot study in which the relevance and application of this model was tested is presented. Lastly, the resulting modification process which led to the integration of the cognitive and affective domains from the taxonomy of educational objectives (Bloom *et al.* 1956; Krathwohl *et al.* 1964) with the community of inquiry model is given, along with the new templates that were used as the final conceptual tools for this inquiry.

4.2 Content analysis models

This section first provides some general background information about some content analysis models that have been influential as building blocks for more recent models (Section 4.2.1). It then describes two models that have been particularly helpful in constructing the conceptual framework for this study: Henri's model (Section 4.2.2) and Gunawardena, Lowe and Anderson's interaction analysis model (Section 4.2.3). Finally, Garrison, Anderson and Archer's community of inquiry model, which was found to be most appropriate for this research, is introduced (Section 4.2.4).

4.2.1 Background information

Analysis of text-based archives or transcripts of interactions can provide a powerful lens to understand online learning and related experiences (Harasim, 1987). Various researchers have developed models and tools to facilitate the analysis of such transcriptions.

In earlier studies, researchers attempted to describe what was happening in an online discussion forum or a computer conference through participation analysis

which has mainly involved tracking the number of postings, tracing the threads of the 'conversations', and counting the number of minutes spent online (Mason, 1991). This type of quantitative analysis approach gives a partial picture of the online activity and can be very informative about the patterns of participation but it does not indicate the quality of the postings, or whether there is, in fact, any learning occurring.

More recent studies (Garrison *et al.* 2000; Gunawardena *et al.* 1997; Henri, 1991) have developed content analysis strategies or models which allow researchers to describe the quality of online messages and to suggest strategies that participants are using to write and learn in the context of the computer conference. Critical thinking skills, social presence, argumentation and knowledge construction have thus been the focus of attention of researchers interested in content analysis of online asynchronous discussions. This case study is mainly qualitative but also uses some of the above-mentioned quantitative methodology.

Zhu's constructivist model (1996) for analysis of knowledge construction and meaning negotiation was refined from Henri's model. Zhu's framework had a more quantitative approach in which a coding scheme consisting of participant categories (contributor, wanderer, seeker and mentor), types of interactions based on Hatano and Inagaki's (1991) theory of group interaction (vertical and horizontal) and notes-meaning categories (question, reflection, comments, discussion, information, sharing, scaffolding) was used for analysis. Other studies have focused on attempting to measure specific cognitive processes, such as Bullen's (1998) analysis of students' levels of critical thinking in an online university course. Newman *et al.* (1995) used content analysis to compare online versus face-to-face undergraduate-level seminars in an attempt to measure critical thinking skills. The authors developed a set of paired indicators for critical thinking: positive (deep) and negative (surface). The framework

is considered to be useful to study different aspects of critical thinking in group learning. Hara *et al.*'s work (2000) studied the social, cognitive and metacognitive elements in an online environment. While Marttunen (1997) analysed levels of argumentation and counter argumentation, Garrison *et al.*'s (2000) community of inquiry model measured the elements of social, cognitive and teaching presence in computer-mediated communication (CMC) in higher education courses.

The following content analysis models have been influential in constructing a conceptual lens for the present study which was interested in using a more qualitative approach for analysing online interactions rather than a quantitative one.

4.2.2 Henri's model (1991)

Henri developed a theoretical framework for analysing online messages, in which analysis involved breaking down the transcripts into 'units of meaning' (part or all of a message). These were then coded into categories or sub-categories. She identified the following five categories which could be used to evaluate computer-mediated communication for types of learning and thinking occurring online.

1. Participative
2. Social
3. Interactive
4. Cognitive
5. Metacognitive.

The cognitive and metacognitive dimensions measured reasoning, critical thought and self-awareness and as such are more likely to be of interest when attempting to reward participants for assessed discussion forum contribution. This model has been criticised for not providing a clearly defined coding system but it has been used

successfully in several transcript analyses to identify high phases of critical thinking. with adaptations.

4.2.3 The interaction analysis model: Gunawardena *et al.* (1997)

The authors noted some difficulties with Henri's model. They felt that the incorporation of the category 'participation' within the categories of critical thinking was problematic, there was ambiguity with the identification of 'units of meaning' and the emphasis of critical thinking phases was on the individual student rather than the group process. Using a gestalt approach to analysing the interaction of the entire online conference to evaluate evidence for the social construction of knowledge, they postulated that the active construction of knowledge (constructivism) moves through five phases:

Phase I: Sharing/Comparing of Information

Phase II: The Discovery and Exploration of Dissonance or Inconsistency among Ideas, Concepts, or Statements

Phase III: Negotiation of Meaning/Co-Construction of Knowledge

Phase IV: Testing and Modification of Proposed Synthesis or Co-Construction

Phase V: Agreement Statement(s)/Applications of Newly-Constructed Meaning.

The coding scheme provided by the authors takes into account 'the type of cognitive activities participants engaged in (questioning, clarifying, negotiating, synthesising, etc.), the types of arguments participants advanced, the resources participants leveraged in exploring their differences and negotiating meaning (e.g. reports of personal experience, literature references, data, etc.) and any evidence of changes in understanding or the creation of new understanding (i.e. knowledge construction) as a result of group interactions.

The authors also found that even though every instance of socially constructed knowledge may not progress linearly through each successive phase, they are nonetheless consistent with much of the literature related to constructivist knowledge creation. Based on these five phases, they developed a model that could be used to analyse the 'the process of knowledge construction that occurs through social negotiation in CMC' (p.400).

They also suggested that when a group of participants in asynchronous discussion forums, separated in time and space, work together to develop shared knowledge, the knowledge construction processes differed in the phases they reached.

Gunawardena *et al.* (1997) used their model to analyse a global online debate and discovered this group had reached Phase 3. They also looked at another social online learning network which reached only Phase 1. It was noted that the phase of knowledge construction process reached will depend on the purpose and design of each online community. This model has been utilised to assess conference postings in professional development conferences; however, it has yet to be used extensively to analyse conference postings with online university courses.

The above-mentioned frameworks provided an understanding and foundation for studying participation, interaction and meaning construction by participants in online discussions. However, most of the category systems were developed prior to the analysis of data and in some cases the coding system did not provide adequate descriptors or indicators. This made it difficult to visualise how to apply them to this research.

4.2.4 The community of inquiry model: Garrison *et al.* (2000)

After looking at several models discussed above, the community of inquiry model was chosen as the most appropriate framework for the analysis of this study. Even though this model was specifically designed to guide the use of computer conferencing to support critical thinking in higher education, after consultation with one of the authors (Randy Garrison) it was decided that it could work equally well in secondary education. The authors (Garrison *et al.* 2000) provide a detailed coding template complete with descriptors and indicators which made it possible to picture the whole coding and analysis process. As I saw the specified codes, I could see their resonance with the characteristics of gifted and talented learners and their needs. In the burgeoning area of online learning in higher education, educators have become increasingly aware that it is important to understand patterns and types of participation amongst the participants and between the participants and the facilitators to ensure successful learning experiences. The community of inquiry model provides a framework which facilitates such an evaluation. This was what I wanted: a model that would enable me to explore and understand the participation of gifted learners in an online community; participation among themselves (social and cognitive relationships resulting from collaboration) and how the presence of an expert or a teacher affected these relationships.

The community of inquiry model, illustrated on the next page, provided the principal framework for the analysis of this study. It was developed by Randy Garrison, Terry Anderson, Walter Archer and Liam Rourke during a Canadian Social Sciences and Humanities research funded project, which ran from 1997-2001, entitled 'A Study of the Characteristics and Qualities of Text-Based Computer Conferencing for Educational Purposes'.

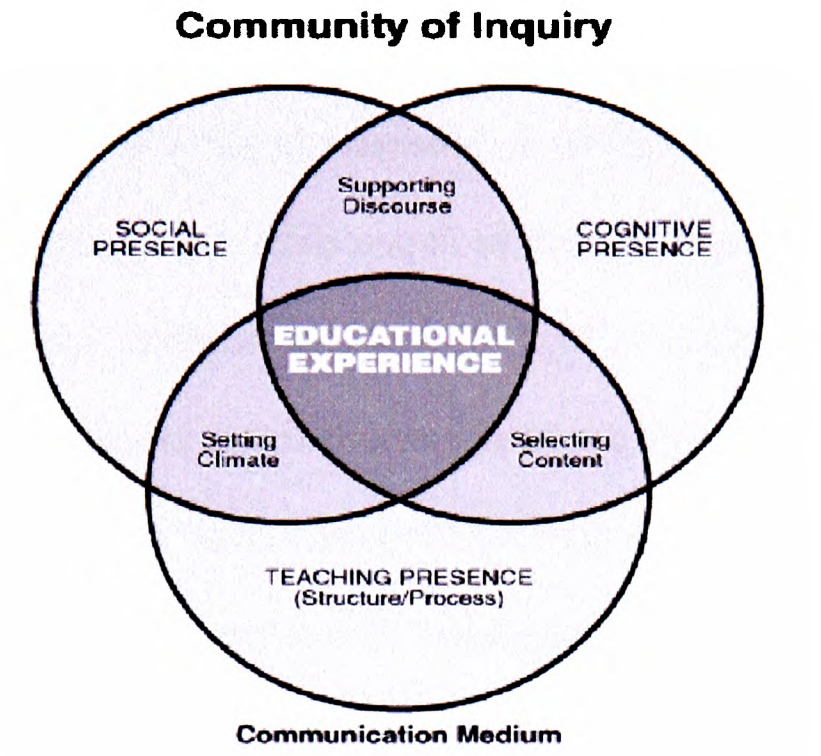


Figure 1: Elements of an educational experience

The authors hypothesise that in an online community of inquiry, personally deep and meaningful learning occurs through the interaction of three core elements: social presence, cognitive presence and teaching presence. Through content analysis of conferencing transcripts in several studies, specific categories, descriptors and indicators (key phrases) were determined to indicate social, cognitive and teaching presence. Building on work of other researchers in the field of computer conferencing and their own extensive exploratory work, the authors developed coding templates to assess each core element. In the following sections (Sections 4.3, 4.4 and 4.5) all the three core elements of the model are described fully, each followed by its corresponding coding template.

4.3 Social presence

Social presence is 'the ability of participants in the community of inquiry to project their personal characteristics into the community, thereby presenting themselves to the other participants as "real people" '(Garrison *et al.* 2000:3). The

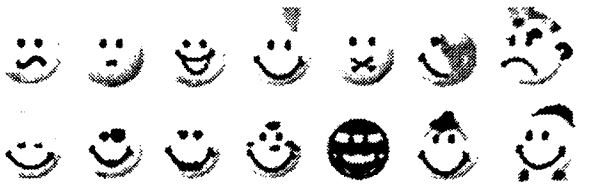
pioneers of the Social Presence theory (Short *et al.*1976) define it as the 'degree of salience of the other person in the interaction and the consequent salience of the interpersonal relationships...' (p.65). In other words, social presence is the degree to which a person feels 'socially present' or is perceived as a 'real person' in mediated communication (Gunawardena, 2005; Gunawardena and Zittle, 1997). There are two non-verbal communication concepts that are said to contribute to a sense of social presence. These are, Argyle and Dean's (1965) concept of 'intimacy' and Wiener and Mehrabian's (1968) concept of 'immediacy' (Short *et al.* 1976). The next section describes each of these concepts.

4.3.1 Intimacy

Argyle and Dean (1965) hold in their equilibrium theory that a state of equilibrium for intimacy exists for any two interacting individuals. The level of intimacy is dependent on the intimacy of the conversation, interaction distance and non-verbal communications such as eye contact and smiles. If any of these variables governing intimacy are altered, one or more of the other variables will shift in the reverse direction in order to compensate and maintain a state of equilibrium. The usual factors in face-to-face discussions that increase the level of intimacy between people are physical distance, eye contact, smiling, other facial expressions and topics of personal interest (Argyle and Dean, 1965). As postulated by the equilibrium theory and the principles of substitutability, a communicator is likely to adopt other symbol systems to convey affective messages that are unavailable non-verbally (Short *et al.* 1976).

While examining online interactions Short *et al.* (1976) speculated that language may substitute or even 'overcompensate' for missing non-verbal information. A participant is likely to modify his or her behaviour because of the

reduced-cue situation. For example, head-nods indicating agreement may be replaced by verbal phrases such as 'I agree.' Thus, to overcome absence of social context or cues, participants in online environments develop unique ways of expressing their emotions and compensate by using emoticons (examples below) and paralinguistic cues such as 'hmmm', 'yuk' (Gunawardena, 2005). These emoticons along with expressions of feeling, self-introductions, jokes, compliments, greetings and closures are claimed to enhance the intimacy level. Table 2 and the diagram below illustrate some of the ways emoticons are used.



:-)	Standard Smiley (you are joking ; satisfied)
:)	Standard Smiley for lazy people
:O	Yelling
;-)	Winking Smiley
:->	Follows a really sarcastic remark
>:{	Angry
:-(	Sad Smiley. You are not joking; you aren't satisfied
:-*	Kissing Smiley
8)	Near-sighted
[ ]	Hugs

Table 2: Examples of some emoticons

In 1998, Bullen found that some of the fundamental requirements (facial expressions, connectedness and physical presence of a mentor and or other peers) for successful interaction and collaboration were lacking in online environments. However, other studies have shown that non-verbal communication (facial expressions, tone of voice, gestures, direction of gaze, posture, actions, dress, 'decor', physical presence) can be deliberately substituted with paralanguage activities and written symbols (as mentioned above, emoticons and expressive language).

Walther (1994) challenges arguments about CMC being an impersonal medium. Based on evidence from studies in which experienced users of computer conferencing believed CMC to be '... "as rich or richer" than telephone conversations and face-to-face conversations'(p.18), he ends up calling the online environment 'hyper-personal'. Nevertheless, other researchers still believe that this non-verbal communication may directly decrease social presence (Hiltz and Turoff, 1996; Picciano, 2002; Rourke *et al.* 2001).

4.3.2 Immediacy

Immediacy is a measure of the psychological distance between the participants. In face-to-face discussions, factors contributing to the levels of immediacy would include physical dress, formality of dress, facial expressions and attitude. There is a direct relationship between social presence and immediacy. The greater the level of immediacy the greater the social presence (Wiener and Mehrabian, 1968). Immediacy can be augmented within an online environment by making it informal, friendly, non-threatening and a welcoming atmosphere which encourages a sense of togetherness (community), which also helps to build trust. Gunawardena (1995) cites studies by Kearney *et al.* (1985) and Christophel (1990) which found positive correlations between teacher immediacy (gesturing, smiling, use of humour, addressing students by name, questioning, encouragement, feedback, relaxed body posture) and learning.

Tu and McIsaac (2002) examined dimensions of social presence using quantitative and qualitative methods in a study about the relationship of social presence and interaction in the online learning environment. Three dimensions of social presence – social context, online communication and interactivity – emerged as

important elements in establishing a sense of community among online learners. Findings reported an increase in the level of online interaction with an improved level of comfort for students online. 'The lack of social context cues and feedback is seen as promoting greater anonymity and social equality among participants' (Gundawardana, 1995:155). Other researchers have also found positive links between social presence and learner and instructional effectiveness and higher collaborative learning (Gunawardena and Zittle, 1997; Gunawardena, 1995; Tu, 2002; Ubon and Kimble, 2004).

> Research on social presence and computer mediated communication has shown that even though this medium has low non-verbal cues and social context cues, participants are still able to project their identities whether "real" or "pseudo" and create social presence. They are also able to feel the presence of others online and create communities which bind them together with common interests. Gunawardena, 1995:156

Referring back to the figure of the community of inquiry model (p.117), the words 'communication medium' towards the bottom indicate that the medium is written language not supplemented by paralinguistic or non-verbal communication, as opposed to most face-to-face educational experiences, where the communication medium is spoken language supplemented by paralinguistic or non-verbal communication. The authors acknowledge and hypothesise that this change may have been seen as being a problem by many educators in establishing an effective online community of inquiry but findings of their study (Archer *et al.* 2001) showed that enhanced social presence levels were instrumental in creating a successful community of inquiry.

4.3.3 Categories for social presence in the community of inquiry model

In order to identify or indicate social presence in an online conference, Garrison *et al.* (2000, 2003) provide three categories in their coding template:

affective, interactive and cohesive. (Please refer to Table 3 on page 124, which is the complete coding template for social presence for this model.)

Affective - emotional expression

This first category refers to the use of emoticons or language (as described above) to show humour or for self-disclosure (sharing of feelings, attitudes, experiences and interests). According to Eggins and Slade (1997) and Gorham and Christophel (1990) both cited in Garrison *et al.* 2003) humour acts as an invitation to converse, thus showing willingness and friendliness; factors which help to increase intimacy. Cutler (1995) suggests that when someone discloses information about themselves it invites others to share their feelings too. When the group knows more about each other, it is easier to create a climate of trust and support and more social presence.

Interactive - open communication

The second category refers to interactive open communication which is described as exchanges that are reciprocal and respectful. This means that participants are mutually aware and recognise the contribution made by others. Respectful attendance to each other's comments shows that the participants are aware that others are present and are responding to messages. This acknowledgement develops group cohesiveness and helps to shape the learning activities, by building and sustaining relationships. The responses (mutual awareness) are an indication of implicit interpersonal support of a willingness to participate and build a relationship with and acceptance and encouragement of the person who started the conversation. In CMC, the reply feature and the ability to quote directly from someone's message help to identify the specific content and the person to whom the reply is directed. Acknowledging someone (recognising) is an example of respect for the individual

contributions. Other forms of recognition and support are messages that show appreciation, are complimentary and encouraging and messages that show agreement or disagreement. The use of emoticons and paralanguage activities helps to show this recognition and is imperative in this text-based medium, where cues such as facial expressions or eye contact are absent.

Cohesive - group cohesion

The third category represents the development of a sense of belonging to the community or a sense of commitment to the group which is essential for sharing personal meaning, augmenting participation and understanding. Garrison *et al.* (2003) hypothesise that when students see themselves as part of a group rather than individuals, the process of critical inquiry and the quality of interactions is enhanced.

4.3.4 Summary of social presence

In summary, the above three categories (emotional expression, open communication and group cohesion) reflect social presence, the ability of learners to project themselves socially and affectively into a community of inquiry (Rourke *et al.* 2001). With respect to gifted and talented learners, I considered these categories of social presence as being essential to meet their need to have the company of similar ability learners. If an online community of inquiry is to be a place where they can meet other gifted and talented learners, then it is be necessary for them to feel 'socially present', to communicate with each other openly so that they can feel and share their experiences and support each other readily. It is important for them to feel that they are in the presence of others like them. Table 3, on the next page, presents the coding template for social presence which shows the descriptors and indicators and gives examples of each category (Affective, Interactive and Cohesive).

Descriptor	Indicators	Socio-cognitive processes
Affective	Expression of emotions	Conventional expressions of emotion, or unconventional expressions of emotion, include, repetitious punctuation, conspicuous capitalisation, emoticons, e.g. 'I just can't stand it when ...!!!!' 'ANYBODY OUT THERE!'
	Use of humour	Teasing, cajoling, irony, understatements, sarcasm, e.g. 'The banana crop in Edmonton is looking good this Year'.
	Self-disclosure	Presents details of life outside of class, or expresses vulnerability, e.g. 'Where I work, this is what we do...' or 'I just don't understand this question.'
Interactive	Continuing a thread	Using reply feature of software, starting a new thread, e.g. 'Subject: Re' or 'Branch from'
	Quoting from others' messages	Using software features to quote others' entire message or cut and paste selections of messages, e.g. software dependent, e.g. 'Martha writes', or text prefaced by less than symbol <.
	Referring explicitly to others' messages	Direct references to contents of others' posts, e.g. 'In your message, you talked about Moore's distinction between ...'
	Asking questions	Students ask questions of other students or the moderator, e.g. 'Anyone else had experience with WEBCT?'
	Complimenting, expressing appreciation	Complimenting others or contents of others' messages, e.g. 'I really like your interpretation of the reading.'
	Expressing agreement	Expressing agreement with others or content of others' messages, e.g. 'I was thinking the same thing. You really hit the nail on the head.'
Cohesive	Vocatives	Addressing or referring to participants by name, e.g. 'I think John made a good point.' 'John, what do you think?'
	Addresses or refers to the group using inclusive pronouns	Addresses the group as 'we', 'us', 'our', 'group', e.g. 'Our textbook refers to...', 'I think we veered off track...'
	Phatics, salutations	Communication that serves a purely social function; greetings, closures, e.g. 'Hi all', 'That's it for now.' 'We're having the most beautiful weather here.'

Table 3: Community of inquiry model and template for assessment of social presence (Rourke *et al.* 2001)

4.4 Cognitive presence

The authors of the community of inquiry model maintain that cognitive presence is a fundamental ingredient in critical thinking and its facilitation. They also contend that the creation of cognitive presence, which is 'the extent to which the participants in any particular configuration of a community are able to construct meaning through sustained communication' (Garrison *et al.* 2000:3) is dependent on the amount of sustained communication within the community of inquiry. They further hypothesise that 'high levels of social presence with accompanying high degrees of commitment and participation are necessary for the development of higher order thinking skills and collaborative work' (Garrison *et al.* 2000:4).

4.4.1 Critical thinking or inquiry (higher order thinking skills)

Building on Dewey's (1933) concept of practical inquiry, Garrison *et al.* (2000, 2003) describe the process of critical thinking as one which is initiated or triggered by an event, followed by perception, deliberation, conception and finally action. Critical thinking is seen not only as internal reflection in a learner's mind, but as a dynamic process that oscillates between private (personal meaning) and the shared understanding (i.e. knowledge). They emphasise that learning 'how to think' is subsumed in learning 'what to think' and is dependent on the domain and context. Critical thinking is the process that takes place when an event triggers a learner to perceive something differently, he or she then reflects on it and the new understanding is then incorporated into their own scheme of things. The learner comes back to the discourse with the community with this new understanding and the process continues. It is in this deliberation and action that critical thinking is taking place.

According to Dewey (1933) there are three stages in the thinking process: pre-reflection, reflection and post-reflection. At the triggering of an event the learner is in a state of confusion or quandary (pre-reflection stage). After reflection or deliberation (practical inquiry) the learner more or less resolves the dilemma (post-reflection stage). A generalised model of Dewey's concept of practical inquiry, which is based on experience or practice, is represented below, in Figure 2.

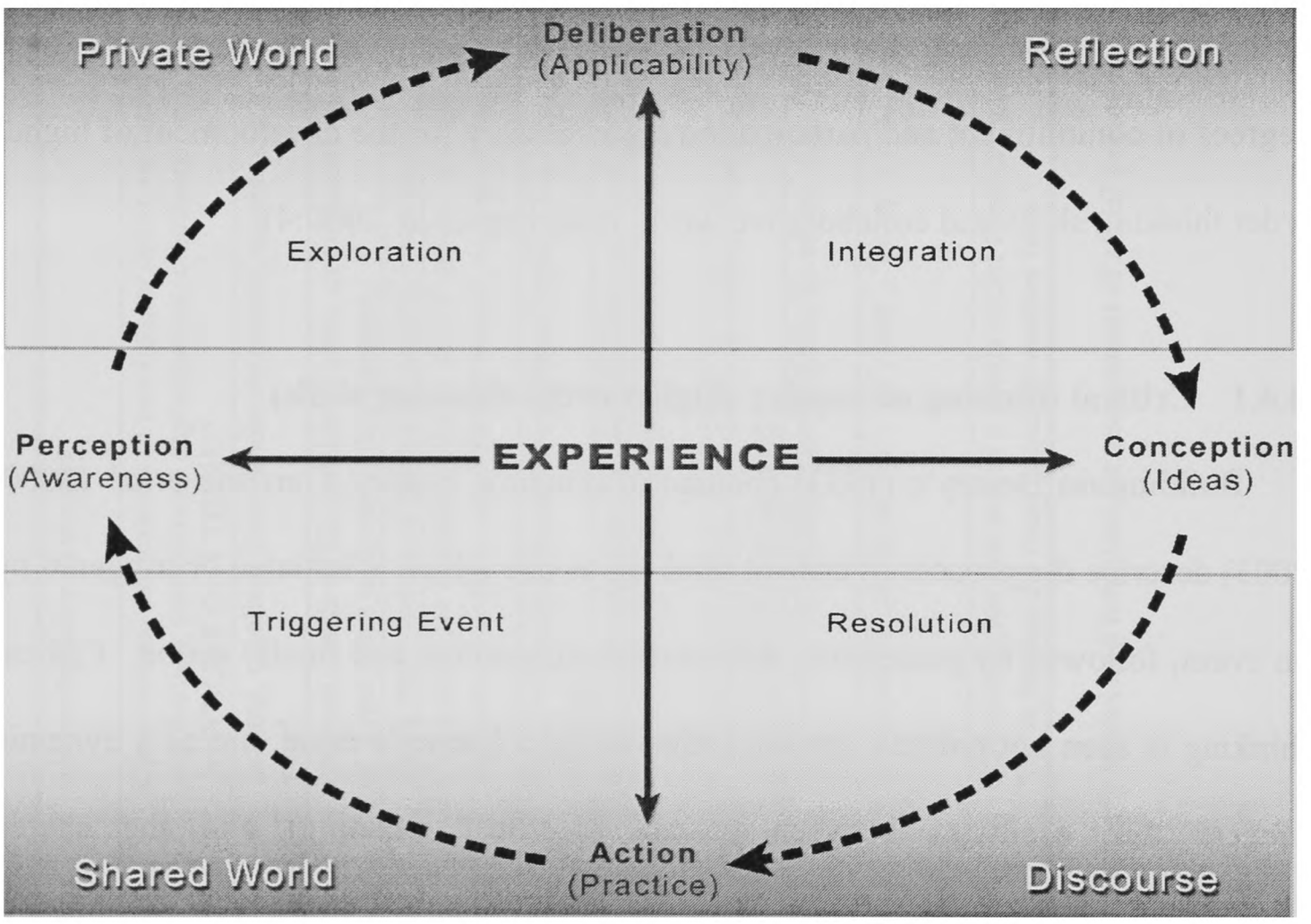


Figure 2: Practical inquiry model (Adapted from Garrison, 2000)

The two axes that structure the model comprise the shared and personal worlds:

- **The first axis** - *Deliberation/Action.* This represents reflection or critical thinking where the learner reviews and assesses (applicability) and then through practice and experience brings the new information into the dialogue (action).

- **The second axis** - *Perception/Conception.* This represents the incorporation of information and the construction of meaning, ideas, thoughts or knowledge.

4.4.2 Categories for cognitive presence in the community of inquiry model

The quadrants mirror the order of the practical inquiry (i.e., critical thinking), and also are used as the four categories of indicators for cognitive presence in the community of inquiry model's coding template. Please refer to Table 4 on page 131, which is the complete coding template for cognitive presence for this model.

Triggering event - evocative

The lower left quadrant represents the first category of cognitive presence and is described as a *triggering event*; An *evocative* initiation phase of critical inquiry which is usually characterised by a *sense of puzzlement*, state of dissonance or feeling of unease (Dewey's pre-reflection stage). A learning challenge or a triggering event can be presented by any group member. In order to keep the inquiry focused the role of the leader may become one of monitoring some of the distracting triggers.

Exploration - tentative

The upper left quadrant represents the second category of cognitive presence and is described as a state of *exploration*, a search for information or knowledge. In the exploring phase the learners shift between their own private reflective world (critical reflection) and the shared world of others (discourse). This category is described as that of searching for clarification and attempting to orient one's attention. (reflection/deliberation). An *inquisitive* or divergent stage where there is *information exchange* between the learners.

Integration – provisional

The upper right quadrant represents the third category of cognitive presence and is described as a state in which assimilation of the information and knowledge into a rational view or hypothesis is being carried out. This category represents the *integration* of the ideas or thoughts and perceptions or construction of meaning resulting from the exploratory phase. This is a *tentative* or a *provisional* stage of *connecting ideas* where the learners still shift between reflection and discourse. This phase is difficult, one that often requires teaching presence to move the thinking process forward. Otherwise, many learners may stay in the exploratory phase for long periods of time.

Resolution – committed

The lower right quadrant represents the fourth category for cognitive presence and is described as a state of *resolution*. In this category the newly integrated idea(s) have been confirmed and the learner is now *committed* to them. Coming back to the discourse he or she *applies the new ideas* (action) and the process of the inquiry continues. This phase can only be tested in an educational setting if there is opportunity to apply the newly created knowledge. If no such opportunity arises, it may simply mean moving onto a new problem.

4.4.3 Summary of cognitive presence

In summary the practical inquiry model maps out the critical thinking process, and is the lens used to operationalise cognitive presence. Table 4 on p.131 presents the coding template for cognitive presence which shows the descriptors, indicators and gives examples of each category (Triggering event, Exploration, Integration and

Resolution). In light of the need of gifted and talented learners to develop their ability to acquire higher order thinking skills of critical thinking, the cognitive presence element of the community of inquiry model appears to present a way of finding evidence to see if this need could be met in the asynchronous environment of online discussion forums. It was envisioned that if adequate cognitive presence could be found in the gifted online community discussions, then perhaps it could be concluded that this need was being met, albeit to varying degrees.

4.4.4 Higher order thinking and AODFs

Garrison (2003) provides further guidance as to how an asynchronous online learning may support effective higher order thinking when there is high cognitive presence. First he considers the properties of the AODFs, such as asynchronicity, connectivity and how these properties give rise to an environment which allows opportunities for plentiful reflection, collaboration, interaction and interdependence. He next suggests that higher order thinking arises from concepts like *reflective inquiry*; *self-direction* and *metacognition*. An environment which allows these concepts to be realised would therefore be very effective for acquiring the skills of higher order thinking. He claims that, 'Asynchronous online learning has the particular properties to integrate the interactive and reflective characteristics to enhance cognitive presence beyond that in even small face-to-face groups' (Garrison, 2003:2). *Reflective inquiry* has been discussed above to considerable depth as critical thinking (practical inquiry model). *Self-directed learning* according to Garrison (2003) is when the students learn to take control of their own learning. For this to occur they need some initial motivation to get started, time to monitor (reflect) on feedback information and then to manage (action) their own learning by taking the responsibility to do the required learning tasks. The interest and the effort however,

must be sustained. Thus both the elements of self-monitoring and self-management become crucial for effective self-directed learners. *Metacognition* involves active control over the cognitive processes engaged in learning. Garrison (2003) cites Schraw (2001) who describes metacognition as having two components:

- *Knowledge of cognition*: this is knowledge of oneself and the tactics used to acquire this knowledge. In other words, it is knowing about what you know and how you came to know it.
- *Regulation of cognition:* this refers to all the strategies one uses to control one's learning.

Reflective inquiry, self-direction and metacognition are all linked to internal cognitive (monitoring/reflecting/reconstructing) and external (managing/regulating/collaborating) control issues. These aspects of higher order thinking skills are congruent both to the needs of the gifted learners and asynchronous environment.

Descriptor	**Indicators**	**Socio-cognitive processes**
Triggering event Evocative	Recognising the problem	Presenting background information that culminates in a question.
	Sense of puzzlement	Asking questions.
		Messages that take discussion in new direction.
Exploration Tentative	Divergence - within the online community	Unsubstantiated contradiction of previous ideas.
	Divergence - within a single message	Many different ideas presented in one message.
	Information exchange	Personal narratives/descriptions/facts (not used as evidence to support a conclusion).
	Suggestions for consideration	Author explicitly characterises message as exploration, e.g. 'Does that seem about right?' 'Am I way off the mark?'
	Brainstorming	Adds to established points but does not systematically defend/justify/develop addition.
	Leaps to conclusions	Offers unsupported opinions, .e.g. ' One reason I think it is seldom used is that it is too complicated to get cooperation.'
Integration Provisional	Convergence - among group members	Reference to previous message followed by substantiated agreement, e.g. 'I agree Because …'
		Building on, adding to others' ideas.
	Convergence - within a single message	Justified, developed, defensible, yet tentative hypothesis.
	Connecting ideas, synthesis	Integrating information from various sources—textbook, articles, personal experience
	Creating solutions	Explicit characterisation of message as a solution by participant
Resolution Committed	Vicarious application to real world	None coded
	Testing solutions	
	Defending solutions	

Table 4: Community of inquiry model and template for assessment of cognitive presence (Rourke *et al.* 2001)

4.5 Teaching presence

The most fundamental element in establishing an online community of inquiry for educational purposes is that of teaching presence, which is 'the design, facilitation, and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes' (Anderson *et al.* 2001). It is the teacher who brings together the community by creating a warm, supportive, friendly and cognitively challenging environment; balancing the social and cognitive aspects of the educational experience. Only with appropriate responsible leadership and direction which creates teacher presence can these experiences be successful for the learners (Gunawardena, 1991; Hiltz and Turoff, 1993). In an asynchronous text-based medium this can be a daunting task, because of the lack of non-verbal and paralinguistic cues, and may well present many challenges. However, building on previous extensive research, and their own exploratory research on teacher presence, Garrison *et al.* (2000) conclude that it is possible to not only create teaching presence but also to sustain it in computer-conferencing environments. The reason why this element in the model is called 'teaching' and not 'teacher' presence is because teaching presence does not necessarily have to be provided by the tutor, moderator or the facilitator but may be provided by any other member of the community of inquiry.

4.5.1 Categories of teaching presence

In order to identify or indicate teaching presence in an online conference Garrison *et al.* (2000, 2003) provide the following three categories in their coding template. Please refer to Table 5 on p.136 which is the complete coding template for teaching presence for this model.

Direct instruction

The first category is concerned with the teacher addressing issues of how the course or forum will function; what material will be covered, how it will be assessed, time constraints and any technically related concerns. This sort of *instructional management* helps in planning, *defining and initiating discussion topic(s).* The teacher or any other person taking the lead role gives the background information of the topic to be covered and presents related questions. As the discussion progresses, he or she may summarise it, clear any misunderstandings, introduce more information from other sources such as other texts or websites and validate learning through assessment or feedback.

Facilitating discourse

The second category recognises the teacher's role in *building understanding* and in supporting the *sharing of personal meaning.* The teacher creates presence by asking appropriate leading questions which probe and challenge the thinker, encouraging thought, leading by example, being the content expert and creating a warm supportive environment in which he or she addresses the learners directly and respectfully. The teacher facilitates discourse by encouraging, acknowledging and reinforcing contributions from the participants, or by pinpointing areas of agreement and disagreement so that a general consensus may be reached. The teacher may have to employ different tactics to get everyone involved and keep the flow of the discussion going.

Instructional design and discourse

The third category takes into account any concerns that the participants may have about the general programme or *organisational* matters, such as deciding what the objectives (topics) will be, and planning the time and the methodology required for each topic. This also includes the teacher reinforcing rules, giving instructions on the effective use of the medium and keeping the *focus of the discussion.* There is a certain amount of overlap between all the categories as the indicators in this category also deal with the facilitating aspects and *direct instruction.* The teacher 'teaches' or communicates instruction by giving some background content, questioning, directing, summarising, assessing and substantiating understanding of discussions and being the resource person. This sort of constructive feedback may become imperative especially when ideas are being critically assessed. All of the above processes have to be accompanied by high levels of 'teacher immediacy' or social presence in very much the same manner as it would have to be done in a face-to-face situation in a classroom.

4.5.2 Summary of teaching presence

Table 5 on p.136 presents the coding template for teaching presence which shows the descriptors and indicators, and gives examples of each category (direct instruction, facilitating discourse and instructional management). This category resonates with the need of gifted and talented learners to have a flexible learning environment in which some structure and direction are also provided (Feldhusen, 1998; Munro, 2005). This may permit them to become independent self-directed learners by keeping them challenged and motivated through frequent feedback, resourceful information and expert advice from the teacher. Due to the virtual and

asynchronous nature of the community environment it may become necessary for gifted learners to take on the responsibility of their own learning by controlling and monitoring what they learn. It was envisioned that if the teacher could provide structure and guidance that would encourage and support students to assume increased control of their own learning then their need to be self-directed might be fulfilled. The constructivist approach in this model where the teacher may be one of the gifted learners themselves may support their need to take leading roles and also encourage divergent thinking. Within a safe online environment, which means there would have to be some constraints, gifted learners may have the freedom to explore, suggest, create and solve. This was how the teaching element of the community of inquiry was intended to be used: as a lens to see if there was any evidence of all of the above in the asynchronous environment of online discussion forums, and if they could indeed support the needs of gifted and talented learners.

Descriptor	Indicators	Socio-cognitive processes
Direct instruction Instructional management	Defining and initiating discussion topic(s)	Present content/questions, e.g. 'Bates says…what do you think …?' Focus the discussion on specific issues, summarise the discussion and confirm understanding through assessment and explanatory feedback and diagnose misconceptions, e.g. 'I was at a conference with Bates once and he said, "You can find the proceedings of the conference at http//www …"' Inject knowledge from diverse sources, and respond to technical concerns, e.g. 'If you want to include a hyperlink in your message you have to …'
Facilitating discourse Building understanding	Sharing personal meaning	Identify areas of agreement/disagreement, e.g. 'Joe, Mary has provided a compelling counter-example to your hypothesis. Would you care to respond?' Seek to reach consensus/understanding, e.g. 'I think Joe and Mary are saying essentially the same thing.' Set climate for learning, e.g. 'Don't feel self- conscious about ''thinking out loud'' on the forum. This is a place to try out ideas after all.' Draw in participants, prompting discussions, e.g. 'Any thoughts on this issue?' or 'Anyone care to comment?' Assess the efficacy of the process, e.g. 'I think we're getting a little off track here.'
Instructional design and discourse Organisation Direct instruction	Focusing discussion	Setting curriculum, e.g. 'This week we will be discussing …' Designing methods, e.g. 'I am going to divide you up into groups, and you will debate …' Establishing time parameters, e.g. 'Please post a message by ….' Utilising medium effectively, e.g. ' Try to address issues others have raised when you post …' Establishing netiquette, e.g. 'Keep your messages short.'

Table 5: Community of inquiry model and template for assessment of teaching presence adapted from Anderson *et al.* (2001)

4.6 The pivotal role of social presence in supporting cognitive functions of gifted learners

The previous sections described three elements that make a learning experience significant. This section examines why the social presence element is of fundamental importance to the facilitation of the development of higher order thinking skills for gifted learners. Socio-cognitive literature states that learning is a social activity; a process of interaction among the group participants is crucial in learning and cognitive development (Harasim, 1990; Vygotsky, 1978). Individuals learn more from their interactions with others than from reading materials alone. Through these interactions individuals actively construct knowledge and then build upon that knowledge through the exchange of ideas with others. The interactions relate to the presence of others in their learning experience.

Vygotsky (1978) believed that the life-long process of development was dependent on social interaction and that social interaction actually leads to cognitive development. He hypothesised that humans use tools that have developed historically within a culture - such as speech and writing - to mediate their social environments. Initially children develop these tools to serve solely as social functions, ways to communicate needs, and then a transition from social speech to internalised thoughts occurs (Driscoll, 2000). Externalisation of these thoughts or knowledge occurs when the learners participate in cultural practice; it becomes a two-way process.

> These shared spaces can become the locus of rich and satisfying experiences in collaborative learning, an interactive group knowledge building process in which learners actively construct knowledge by formulating ideas into words that are shared with and built on through the reactions and responses of others.
>
> (Harasim *et al.*1995:4)

The goal of the process of inquiry is to allow the participants to enrich and expand their own conceptual frameworks as they get opportunities to perceive numerous points of views. Hence the community of inquiry is not just the place where information is exchanged but where it is also analysed, contrasted and evaluated in order to modify and internalise it within their own schemas.

The ability of AODFs to facilitate peer interaction, both social and cognitive, is perceived as one of the great strengths of online education, as it allows the type of collaboration that is usually only possible in face-to-face situations (Harasim, 1990). 'Collaboration is seen as an essential aspect of cognitive development since cognition cannot be separated from social context' (Garrison *et al.* 2000:92).

Sections 4.3-4.5 described the core elements (social presence, cognitive presence and teaching presence) identified in the community of inquiry model and also presented the coding templates for each. Before embarking on the coding process for the entire study, it was deemed necessary to establish if indeed these templates would be satisfactory. For this purpose, a pilot study was carried out in which messages posted were coded and analysed over a period of three months. Section 4.7 describes this pilot study and how it led to a modification process.

4.7 Pilot study

Through the conceptual lens provided by the community of inquiry model, it appeared that the three core elements were congruent to the needs of gifted and talented learners on which this study intended to focus. Thus it was argued that if there was high social presence within the online community, it might indicate that this environment was a place where gifted and talented learners came to meet, discuss and be with others like themselves. This would mean that their need to have the company

of others with similar ability would be fulfilled. Similarly, a high cognitive presence would indicate that the community environment was conducive to honing some types of higher order thinking skills, like analysis, synthesis and evaluation, a need associated with gifted and talented learners. As for high teaching presence, which was also seen as being highly relevant to gifted and talented learners, it would be indicative of a constructivist environment in which it is not only the teacher who is leading but any of the community members. The guiding presence of an expert and/or a mentor might also be the motivating factor needed for them to remain challenged, which in turn might lead them to become self-directed learners.

The pilot study was conducted to judge the applicability of the coding templates provided by the authors of the community of inquiry model. Messages posted by gifted learners in an online community over a three-month period were coded using the original codes of the community of inquiry templates. Although these codes were useful initially, the coding process itself generated the need to create a few more specific categories: categories that were perhaps more relevant to gifted and talented learners and easier to follow. It was also necessary to break down some of the codes further in order to be more specific. At the end of the analysis it was determined that with some modification of the original codes the analysis would establish the presence or non-presence of each of the elements adequately. However, prompted by the interaction analysis model by Gunawardena *et al.* (1997) which is geared to determine the stage or level reached in five phases (see p.114), just establishing the presence (social. cognitive and teaching) did not seem adequate. The type of questions that came to mind were: How would it be possible to establish the level of social or cognitive presence? For example, were all higher order thinking skills being met if

there was high cognitive presence? Did some reach higher levels than others and why?

The hierarchy of learning skills described by the taxonomy of educational objectives (Bloom *et al.* 1956; Krathwohl *et al.* 1964) seemed to provide the solution to this problem. The reasons were twofold. First, the taxonomy could offer a breakdown of both the affective and cognitive skills which would be the stages reached. Second, the taxonomy which has often been associated with teaching gifted and talented learners was a way to customise the coding templates further to their needs.

The integration of the two frameworks (community of inquiry model and the cognitive and affective domains of the taxonomy), and the new categories generated by the coding process produced templates that were more useful in the context of this research.

4.8 The second framework and the integration process

This section begins by describing briefly the stages in the cognitive domain (Bloom *et al.* (1956) and the affective domain (Krathwohl *et al.* (1964) of the taxonomy of educational objectives as the secondary framework for this study (Section 4.8.1). This is followed by an explanation of the process of integration of the core elements of the community of inquiry model framework with the levels of Bloom *et al.*'s (1956) model and Krathwohl *et al.*'s (1964) taxonomy which gave rise to new coding templates, which I called the 'relational dimension' (Section 4.8.2); the 'conceptual dimension' (Section 4.8.3) and the 'pedagogical dimension' (Section 4.8.4). These sections explain how these new dimensions were conceived. At the end of each section the new template which shows the amalgamation of the original

frameworks and the final version is presented. Finally, there is a summary of the integration process (Section 4.8.5).

4.8.1 The Taxonomy of Educational Objectives (Bloom *et al.* 1956; Krathwohl *et al.* 1964)

The taxonomy is a popular instructional model which was developed by the prominent educator Benjamin Bloom with a group of educational psychologists in 1956. They developed a classification of intellectual behaviours or skills considered to be important in the learning process. The taxonomy embodies the view that some types of thinking are of a higher level than others, and that types of thinking can be both observed and characterised. Bloom *et al.*'s model assumes that by aiming for higher levels of thinking we can become better thinkers. The taxonomy has withstood the test of time extremely well, albeit some revisions were made by Anderson and Krathwohl in 2001. It has taken on renewed importance in the information or knowledge age as it has the ability to provide a powerful lens through which it may be possible to discern how effective computer networks and related applications are as intellectual power tools. As a measurement tool for thinking, it may help to recognise which areas technology can and cannot reach.

According to the taxonomy there are three types of learning behaviour categories: cognitive, affective and psychomotor. Each type of learning behaviour is subdivided into further levels which are arranged in a hierarchy, going from the lowest to the highest. Each level requires increased thinking skills and includes the previous levels as subsets of the new level. This study draws on the first two categories to help elucidate the thinking processes of gifted learners which might be possible in AODFs.

In the cognitive category or domain the learning skills progress in the following order: knowledge, comprehension, application, analysis, synthesis and evaluation (Figure 3). The last three are considered to be higher order skills. Gifted children are believed to be particularly adept at learning to use them (Colangelo, 2002). Analysis refers to the ability of a learner to break a skill or conceptual structure into its component parts. Synthesis is the building of complex skills or conceptual structures from simple parts. Evaluation calls for the comparison of skills and structures and the making of judgements about them. As was discussed earlier, online discussion forums are deemed to be fertile grounds for learning higher order skills.

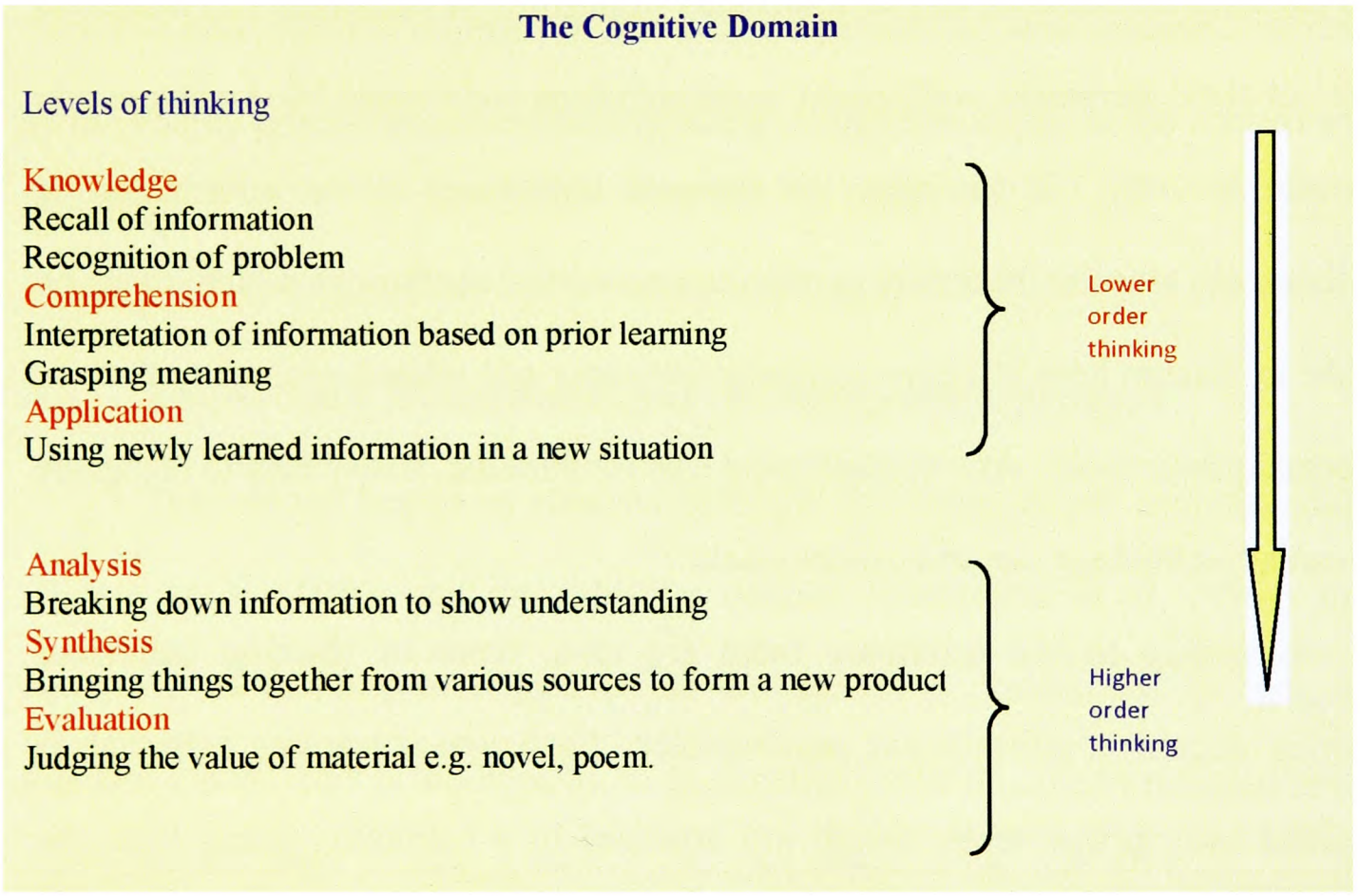


Figure 3: The cognitive domain (Bloom *et al.* 1956)

In the affective or emotional domain the skills progress from receiving, responding, valuing, organisation, to internalisation of values (Figure 4 on the next page). These skills involve divergent thinking, a quality also attributed to gifted and talented learners. Receiving is the willingness to learn, responding is active

participation, valuing is recognising the value behind the activity, organisation is the categorisation of the values after comparison with other values and internalisation is making the value part of one's own value system such that it affects future behaviour.

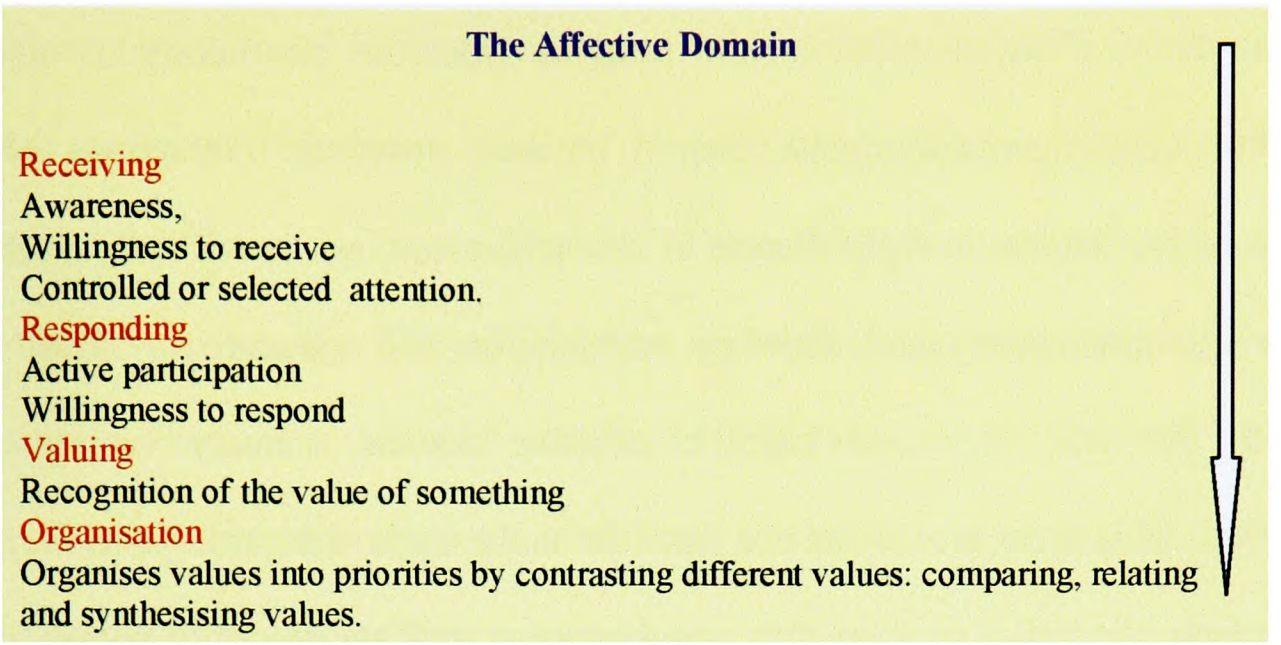


Figure 4: The affective domain (Krathwohl *et al.* 1964)

Bloom *et al.*' s model was not specifically created for the gifted, but educators of gifted learners believe that since these pupils are already working primarily at the higher levels of thinking, one of the major objectives of programmes for the gifted should be to help them develop higher order cognitive skills, problem-solving skills, and creativity. The next three sections explain the integration process of the two frameworks which gave rise to the relational, conceptual and the pedagogical dimensions.

4.8.2 The relational dimension

The first category of social presence (affective) in the community of inquiry model generally designates codes that refer to expressing emotions using emoticons, humour or self-disclosive information. This type of communication is implies that one person is aware of an other and is displaying a willingness to respond. This category was therefore likened to the first two levels of the affective domain. It was

suggested that Stage 1 would be when the learner 'receives' or perceives the presence of the other including new knowledge, and that Stage 2 would be when they demonstrate this by replying (responding) and using the first names of the participants.

Similarly, if we take the second category from the community of inquiry model (interactive-open communication), it basically involves interactions which make use of the automatic reply feature of the software to ask specifically directed questions, complementing and showing appreciation and agreement. This was likened to the next two levels of the affective domain, namely valuing and organisation. This is because as the communication develops, the participants seem to be recognising the value of what they are discussing and are therefore appreciative and complimentary, as they evaluate, contrast and make associations with other values. These were directly translated as the third and fourth stages of emotional skills in the new coding template. Additional codes that emerged during the coding procedure were also added to these stages. These included having strong beliefs, being helpful and showing persistence in Stage 3 (Valuing), and having a sense of responsibility in recognising the need for a balance between having the freedom to do anything and responsible behaviour, in accepting ethical standards and dividing time responsibly between work and family. This was seen as being relevant to gifted and talented learners who may at times become very analytical of situations and also excessively withdrawn into their work.

The third category in the community of inquiry model (Cohesive) dealt with codes that show group togetherness, such as addressing other members using inclusive pronouns, greeting and encouraging everyone as a whole or a team. This did not translate directly into the last stage (internalisation of values) of the affective

domain. These codes were incorporated in Stage 1 and Stage 2 categories (Receiving and Responding) as active participation codes. It was argued that the participation level stays the same whether the message is directed to the group or an individual.

After noting that there were many overlapping behaviours the authors (Krathwohl *et al.* 1964) together with many other colleagues produced a continuum of a wide range of behaviours such as interest, appreciation, attitudes, values and adjustment as shown in Figure 5 below. These behaviours are just some examples and they show that it is difficult to place each behaviour in one particular level or category. There is a constant process of going to and fro between the levels. Internalisation (incorporating as one's own) is seen as a vital element in the development of a conscience or moral values.

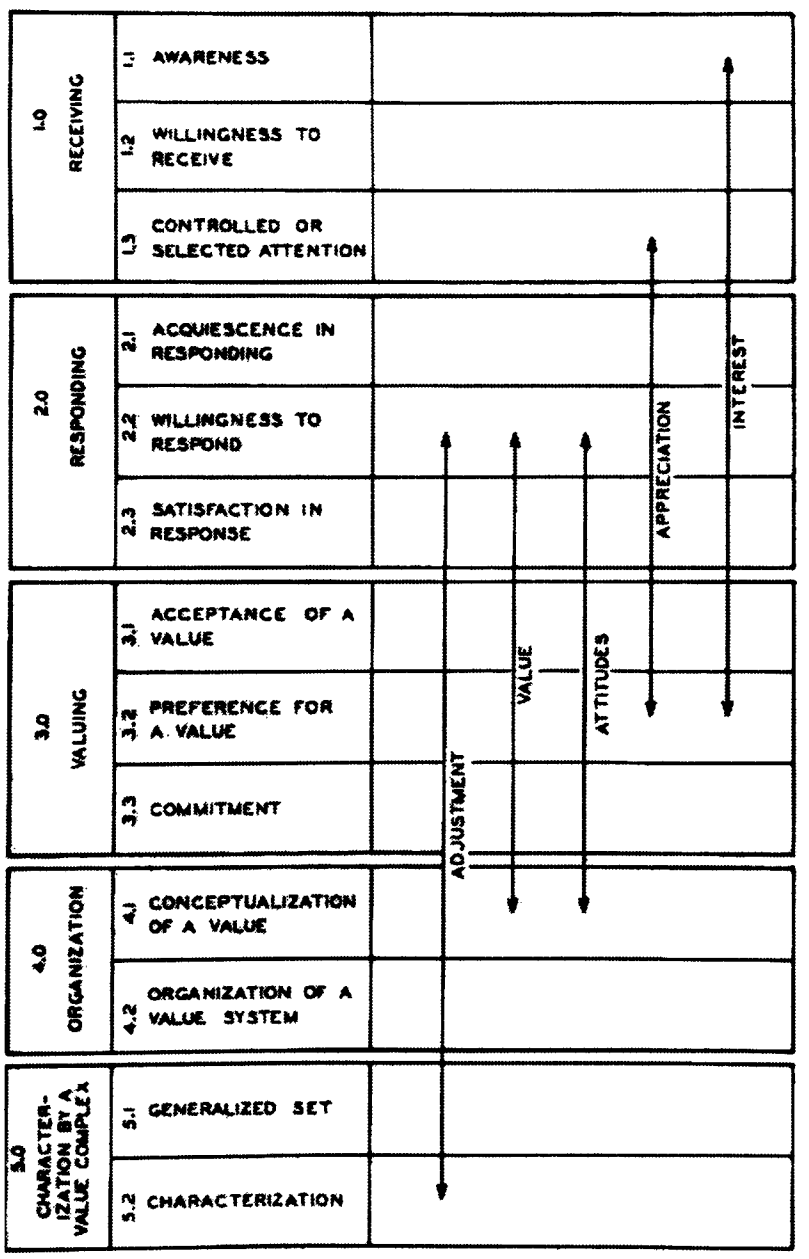


Figure 5: The range of meaning typical of commonly used affective terms measured against the taxonomy continuum (Krathwohl *et al.* 1964:37)

> Internalization as defined in the taxonomy provides equally for conformity and non-conformity, as either role pervades individual behaviour. The term "internalization" is the process through which values, attitudes etc., in general are acquired ... (Krathwohl *et al.* 1964:29)

Stage 5 of the affective domain was also seen as the last stage or perhaps the highest level in the new coding template. This is because at this level of internalisation (also referred to as a characterisation by a value or value complex in the affective domain) the values already have a place in the individual's value hierarchy and are organised into some kind of internally consistent system of beliefs, ideas and attitudes. For example, there may be a change in behaviour in attitude towards their own work and towards other people.

While Appendix C illustrates the above-described integration process of the two frameworks, Figure 6 on the next page illustrates the relational dimension template that was used for the final coding.

Code System

THE RELATIONAL DIMENSION

Emotional Skills

Receiving — **Stage 1**

- Asking questions from community members
  - General
  - Topical
- Expressing appreciation
  - Complimentary
  - Agreement

Responding — **Stage 2**

- Display of emotions
  - Emotions
  - Sense of humour
  - Self-disclosure
- Sharing information about events/materials
- General revealing fact
  - Low confidence, confused
  - High confidence, self-assured
- Interpersonal relations
  - Using first name
  - Showing solidarity with group
- Active participation
  - Quoting from other messages/Continuing a thread
  - Referring explicitly to other messages
  - Providing an answer
  - Asking further clarification

Valuing — **Stage 3**

- Sensitivity
  - Helping others
  - Strong beliefs
- Recognition of the importance of new info/skills
  - Persistence

Organisation of values — **Stage 4**

- Sense of responsibility
  - Accepts responsibility for own behaviour
  - Recognises need for balance between freedom/responsible behaviour
  - Accepts professional ethical standards
  - Prioritises time effectively(work/family)

Internalisation of values — **Stage 5**

- Change of behaviour
  - Self-reliance in independent work
  - Cooperative when working with others
  - Values people for what they are

Figure 6: The relational dimension

4.8.3 The conceptual dimension

The first category of cognitive presence (Triggering event) in the community of inquiry model generally designates codes that suggest the beginning of a learning process which starts with something unfamiliar to the learner. This causes him or her to become aware of the problem which results in a sense of puzzlement. As explained earlier, using Dewey's practical inquiry model this acknowledgement may lead to different forms of information exchange with the community which helps the learner form a tentative or speculative opinion about the matter in hand. Sometimes conclusions may be reached intuitively. These two categories (Triggering events and Exploration) were considered as representing Dewey's pre-reflection stage and were consolidated to become the first level (Knowledge) of the cognitive domain (Bloom *et al.* 1956). The cognitive domain defines knowledge as recall of many previously learned concepts like specific facts, rules, terminology, ways of knowing how to deal with certain problems, ways of organising, studying, judging and criticising, etc. It was argued that these processes would incorporate the triggering of an event, sense of puzzlement and exploring within through reflection and without with the aid of the community members, which may then lead to some initial conclusions. Knowledge exploration was therefore called Stage 1 in the new coding template.

The third category of the community of inquiry model (Integration) which refers to the learner agreeing with other community members, connecting ideas, creating and testing solutions by applying those ideas. This was seen as being equivalent to the next three stages of the cognitive domain (Comprehension, Application and Analysis). Comprehension, according to the cognitive domain represents the lowest level of understanding, in which the learner grasps the meaning of what is being communicated by interpreting information based on prior learning.

This may involve using translating, interpretation and extrapolating skills. For example, being able to decipher mathematical/scientific symbols, or being able to analyse graphical data.

Application, the next level in the cognitive domain, is the skill or ability to use newly learned information in other situations. The procedure is described in the cognitive domain as follows. When a problem is presented, it is perceived by the learners in two ways. In the case where the problem is identified as being unfamiliar, the learner will first search for familiar elements to restructure it into a recognisable context. In the case where the learner recognises the problem as being familiar there may still be some restructuring, albeit a little less, to remodel it to an even more familiar context. In both cases, once the problem has been classified as a known one, the learner seeks to find suitable ways to solve it by examining knowledge through abstraction of known theories, principles or ideas. Once found, the learner applies this abstraction to solve the problem. The process of application in which the learner negotiates meaning and co-constructs knowledge through arguments in an effort to find solutions by applying learnt knowledge was regarded as Stage 3 in the cognitive process in the new coding template. In this stage the discussions that had started in Stage 2 (Comprehension) now reach Level 2.

Analysis, the next level in the cognitive domain, is the skill to break down information into its parts to show complete understanding. It is the ability of the learner to check if there is consistency between any hypothesis and given information, and to examine both stated and insinuated assumptions. In the new coding template, this became Stage 4, keeping in mind that 'the whole cognitive domain is arranged in a hierarchy, that is, each classification within it demands the skills and abilities which are lower in the classification order' (Bloom *et al.* 1956:120).

The discussions now reach Level 3, in which the learners present their discussions in logical ordering (agreement and disagreement) with systematic and well-supported arguments, analysing each component carefully.

Finally, the last category in the community of inquiry model (Resolution) designates a stage which shows commitment, where solutions are tested and defended openly. The newly learnt knowledge has now been accepted. This was mapped to two of the cognitive domain levels (Synthesis and Evaluation). According to the cognitive domain, synthesis involves the putting together of elements and parts and arranging them in such a way that they create a new pattern or structure. It is the ability to plan, tell personal experiences, make mathematical discoveries or generalisations. This was Stage 5 (Synthesis) in the new coding template with codes referring to situations where the learner ends up connecting ideas from various sources, produces a new or original design/idea/argument, summarises it, creates and proposes novel solutions.

Evaluation, the last and highest level in the cognitive domain which became Stage 6 in the new coding template deals with the ability to judge, compare, criticise or assess work. This involves a deep and thorough understanding of other comparable works of recognised excellence.

While Appendix D illustrates the above-described integration process of the two frameworks, Figure 7 on the next page illustrates the conceptual dimension template that was used for the final coding.

Code system

THE CONCEPTUAL DIMENSION

Knowledge Skills

Knowledge exploration — **Stage 1**

- Triggering events
  - Recognition of problem
  - Sense of puzzlement
- Information exchanges
  - Adds to knowledge (shares, compares, facts)

Comprehension — **Stage 2**

- Grasping meaning/discussion begins
- Follows instructions successfully
- Expresses opinion/views
  - Own view: I think, I believe, in my opinion
  - Agreement with other messages + own views
  - Disagreement with other messages + own views
- Further detailed message following previous one
- Answers someone's question
- Suggestions for further consideration

Application — **Stage 3**

- Negotiation of meaning/co-construction of knowledge
  - Disagreement
    - No supportive argument
    - With supportive argument + comments taking discussion forward
  - Agreement
    - Agreeing with other's message (I agree...) + raising more points

Analysis — **Stage 4**

- Agreement +disagreement
- Logical ordering

Synthesis — **Stage 5**

- Creating solutions
  - Connecting ideas from various sources
  - Producing a new or original design/idea/argument
  - Summarizing and proposing solution

Evaluation — **Stage 6**

- Judging: compares, appraises, concludes, criticises
  - Critical assessment of ideas/material/books, etc.
  - Questioning evidence provided for argument
  - Recognising subjectivity
  - Making choices based on reasoned argument

Figure 7: The conceptual dimension

4.8.4 The pedagogical dimension

In this dimension, it was not deemed necessary to construct any new stages for teaching presence, since the whole process appears to be a comprehensive one and seems to demand all the processes all the time. The names of the categories (Direct instruction, Facilitating discourse and Instructional design and discourse) remained the same. Since there seemed to be a certain amount of an overlap within the categories, I moved some of the given codes to different places and added a few new ones to accommodate and customise the template to this study.

The first category which refers to direct instruction appears again in the third category (Instructional management); for example, indicators like summarising discussions, focusing discussions, answering questions were perceived as being more to do with facilitating discourse. Additional indicators or codes like asking leading questions and encouraging the participants to take the lead were added occasionally. This was to try to customise the template for gifted and talented learners. Literature on gifted and talented learners recommends teachers to ask leading questions, to act as learners themselves and to give students the opportunity to take the occasional leading role. Therefore these codes were created to see if there was any evidence of this happening.

While Appendix E illustrates the above-described process, Figure 8 on the next page illustrates the pedagogical dimension template that was used for the final coding.

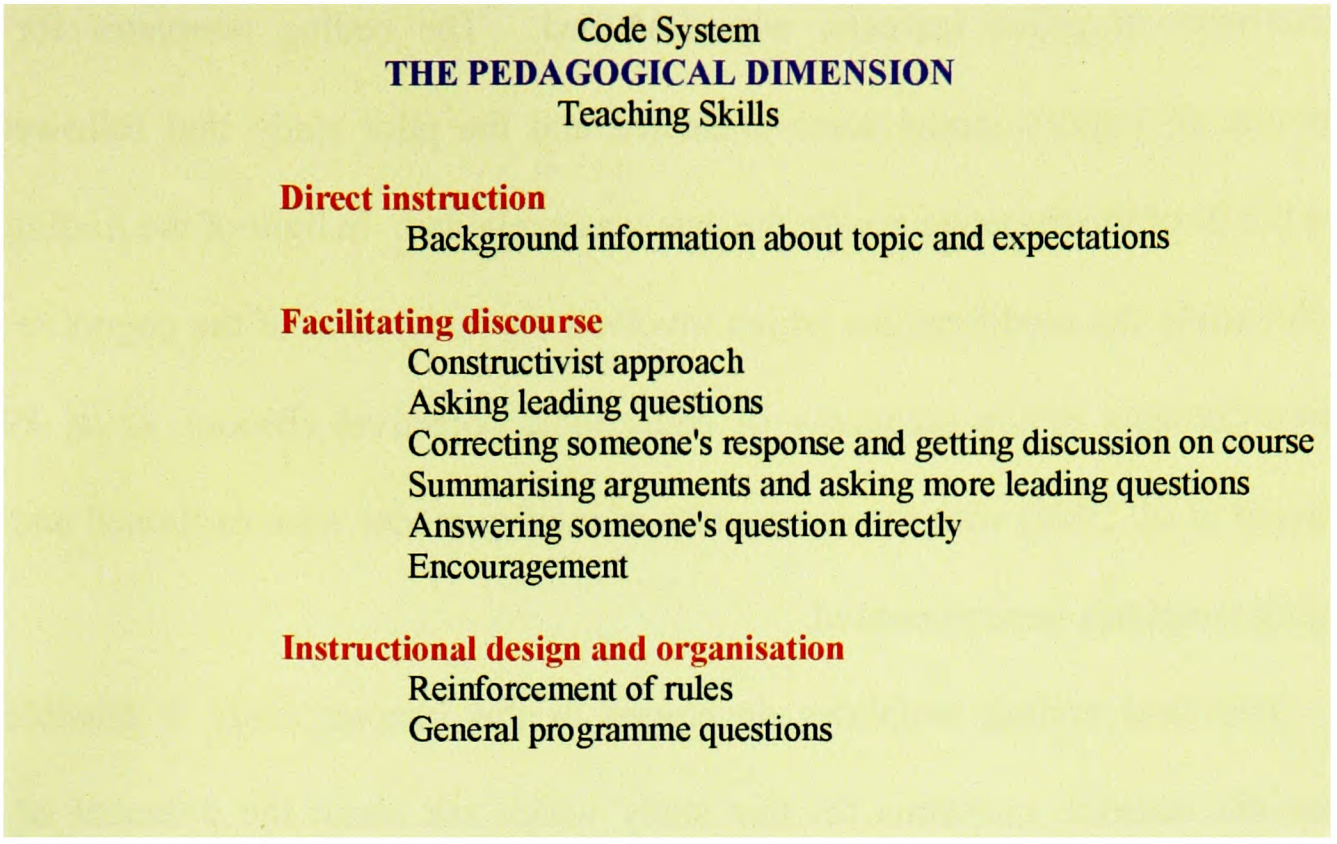


Figure 8: The pedagogical dimension

4.8.5 Summary of integration of the two frameworks

The above sections have discussed the way the two principle guiding frameworks (community of inquiry model and the taxonomy of educational objectives) were used as lenses to create new templates which were called the relational dimension, which refers to the varying ability of the learners to relate to other learners and build relationships; the conceptual dimension, which refers to the varying ability of the learners to construct knowledge; and the pedagogical dimension which refers to the ability of the leading person to help foster a socially conducive learning environment.

4.9 Conclusion

The aim of this chapter was to familiarise the reader with the framework to be used to analyse the data. After presenting some of the content analysis models that had been considered for the analysis of this study, the community of inquiry model (Garrison *et al.* 2000), chosen for its clarity and resonance with the needs and

characteristics of gifted learners, was described. The coding templates for the community of inquiry model were presented and the pilot study that followed to ensure the fit of the framework with the data was explained. In light of the findings of this pilot study the modifications which involved the integration of the cognitive and affective domains of the taxonomy of educational objectives (Bloom, *et al.* 1956; Krathwohl *et al.* 1964) with the community of inquiry model were explained and the emerging templates were presented.

The final coding templates developed in this chapter made it possible to address the research questions for this study which ask about the potential of the AODF to promote an online community of inquiry: a place where the gifted learners might find support for their emotional and cognitive needs. The next chapter is the first of two methodology chapters. The first (Chapter 5) introduces the research design, the research site, the research sample and the research questions. The second (Chapter 6) describes the data-collection methods, the analytic processes and other methodological concerns such as ethics, trustworthiness and generalisability.

CHAPTER 5

Methodology 1:Sample Selection, Research Questions and Overview

5.1 Chapter overview

This chapter begins by presenting the overarching and operational research questions, followed by a discussion of the rationale for selecting the case-study approach as the research design. It then identifies the cases and describes the processes behind their identification and selection and the decisions relating to the reporting of the cases. Next, the research sample (four discussion forums: 'Ethics and Philosophy'; 'The Reading Group'; 'Astronomy and Space' and 'General Debates') case studies are presented followed by a description of the research site, NAGTY (National Gifted and Talented Youth Academy) and the research community.

5.2 The research questions

Good research questions are clear, specific, answerable, interconnected and substantively relevant or worthwhile (Punch, 1998). There is no foolproof automatic way of generating such questions other than first deciding on a general research focus or area and then going through a very gradual refining process of breaking that down into smaller, more specific ones (Robson, 2002). Consequently, my research questions went through an ongoing process of revision, alteration and adjustment. This process helped me formulate a workable methodological approach for studying online discussion forums. The questions were helpful in focussing, clarifying and identifying areas that enabled an understanding of the online community of gifted and talented learners. A pilot study (discussed earlier), which examined data scanning three months of usage by forum members, was particularly useful in arriving at the final version of the research questions which helped shape the methodology, interpretation and analysis used throughout this study.

Punch (1998) suggests that research questions may serve five main functions: organising the project and giving it direction and coherence; delimiting the project, showing its boundaries; keeping the researcher focused during the project; providing a framework for writing up the project; and pointing to the data that will be needed. Two types of research question were posed in this study, and Figure 9 shows that each served a different function. While the overarching question set the study in its broad context, the operational questions refined its focus and guided later stages of analysis.

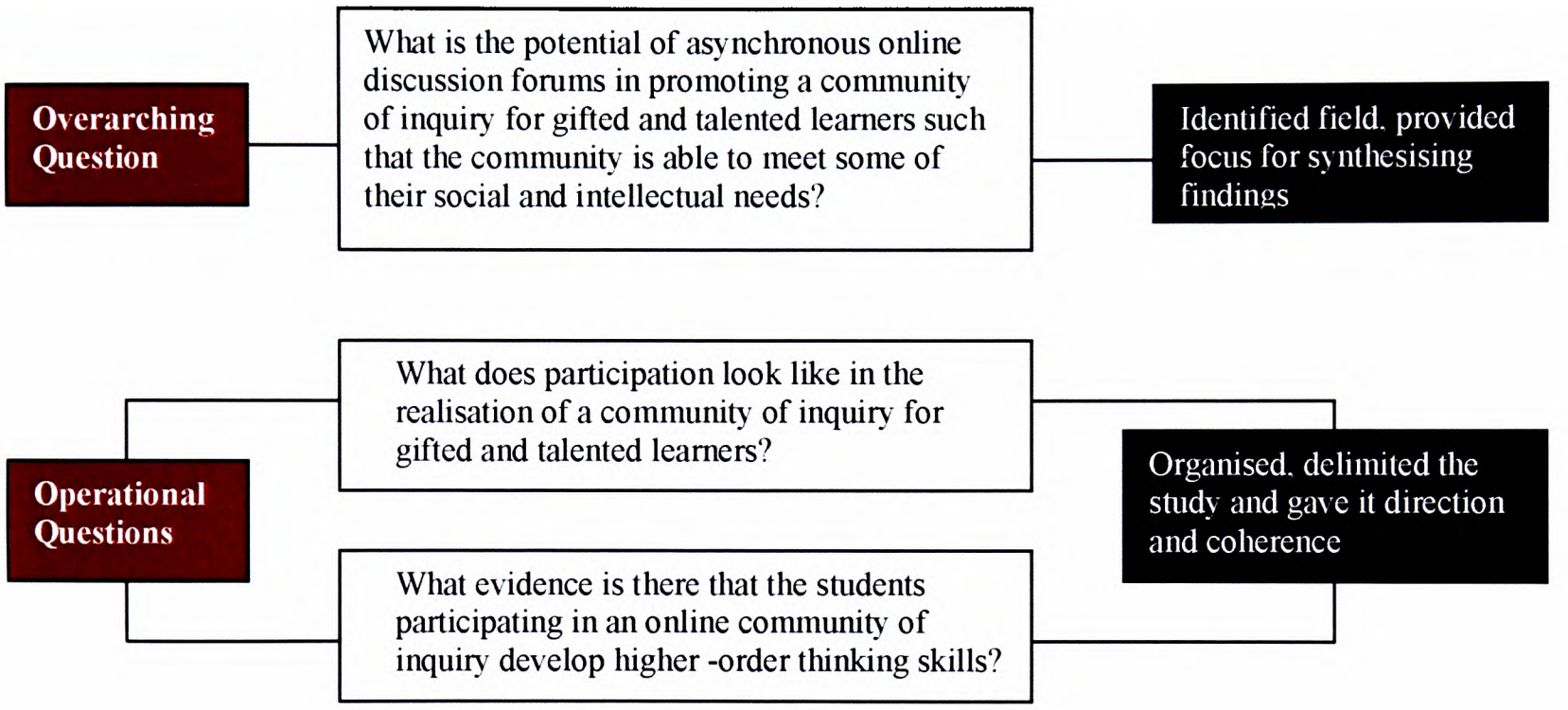


Figure 9: Research questions and their functions in this study

5.2.1 The overarching question

The overarching question which led this research was:

> *What is the potential of asynchronous online discussion forums in promoting a community of inquiry for gifted and talented learners such that the community is able to meet some of their social and intellectual needs?*

It asked what potential an online community of inquiry might hold for gifted learners: whether participation in an online community in any way enhanced the chances of meeting some of the needs of gifted learners; needs such as the company

of like-minded peers, more challenge, inspiration and cultivation of critical thinking skills that can help them become life- long learners. The overarching question served an additional function at a later stage in the research when it provided a focus for synthesising the findings in response to the other research questions and for identifying the main substantive contributions offered in this study. The response to this question is presented in Section 9.4.

5.2.2 The operational research questions

The first step in translating the broad focus into more operational research questions involved understanding how the gifted learners realised participation in the online community and to what extent these participatory exchanges could promote the development of higher order thinking skills. The first operational question posed was:

> *What does participation look like in the realisation of a community of inquiry for gifted and talented learners?*

This was addressed through the relational dimension (discussed in Chapter 4) which focused on the relationships fostered in the community amongst the members (learner–learner, learner–teacher and learner–the online culture/space). It asked whether these participatory relationships which indicate the social presence of the learners in any way help or increase the possibility of gifted learners having some of their socio-emotional needs met: how and in what ways? The second operational question posed was:

> *What evidence is there that the students participating in an online community of inquiry develop higher order thinking skills?*

This question sought to understand if the participatory interchanges could in some way encourage or promote the possibility of the learners engaging in cognitive exchanges that could lead to them developing higher order thinking skills. This

question was addressed through the conceptual dimension (discussed in Chapter 4). This question also helped to explore if and how cognitive presence changed in the different forums and why?

When viewed as guiding questions for a piece of case-study research, it is clear that there are two goals operating here. These are loosely tied to the distinction Stake (1995:88) draws between two sorts of case-study methodologies, contrasting intrinsic with instrumental studies. He suggests that the former generate findings that are discreetly useful and meaningful, while the latter produce research that is enlisted in answering some larger question. Stake goes on to say that intrinsic case-study research is ideal for studying situations and groups that are, on their own, interesting, independent of any theory or theme; while instrumental case-study research is more suitable for exploring how unique cases operate within a theoretical system. While separating these approaches is appropriate in a very simplistic research design, it may not hold in all case studies that a clear boundary can be drawn between the inherently intriguing cases and the articulated social, political and economic structures within which they operate. It seems likely that, in fact, most thorough case-study research will not be able to ignore context, and must treat both intrinsic and instrumental elements, not one set or the other. To that end, the research questions for this study reflect my simultaneous attention to both approaches – an intrinsic look at the forums offered descriptions of the learners, the infrastructure, content and activity within them and provided the background that lead to an instrumentally oriented answering of the broader question about the potential of the community.

5.3 The research design

The general background and personal motivations for conducting this research were discussed in chapter 1 (p.16). I explained how the findings of my MSc dissertation (Kaur, 2004) – 'Thinking about ICT: Perceptions of Gifted Children' - had a bearing on the methodological approaches chosen for this study. Sections 5.3.1-5.3.4 discuss the case study approach and how the processes that lead to the selection of the case(s) and other related decisions were made.

5.3.1 The case-study approach

The case-study approach is considered to be a particularly suitable methodology for dealing with critical problems of practice and broadening the knowledge base of various aspects of education (Merriam, 1988). The lack of literature around the use of online discussion forums for secondary-aged gifted learners lends itself well to a case-study approach: a flexible qualitative strategy that considers people and their activities *in situ* leading to a 'thick description' (Geertz, 1973). Considerable descriptive depth is necessary to begin to build the literature about the use of discussion forums with gifted and talented learners - the sort of findings that can be produced by an exploratory descriptive case-study research.

Case-study research is well-suited to research that is concerned with a more holistic sense of the phenomena and the people in question, especially when they are novel and emergent (Stake, 1995). Yin (2003) makes a similar point and further suggests that case studies work well when they are geared to answering questions that deal with groups and situations where boundaries are not clear to the researcher, as may be true of online communities that influence learners' educational experiences in

and out of school. The goal of this research was to gain an in-depth understanding of what participation in the discussion forums meant for gifted learners.

There is a significant amount of opposition to case-study research on the grounds of a 'lack of rigor' and 'little basis for scientific generalization' (Yin, 2003:10). According to Atkinson and Delamont (1985, as cited in Bassey, 1999), and indeed from my own readings, there seems to be no single, universally agreed understanding of case study as a methodology or research approach among social scientists; the 'unit of analysis' (case) can mean almost anything and often the terminology and procedures are contested. However, Simons 1996, welcomes the resulting paradoxes and looks at these inconsistencies in a positive manner:

> Paradox for me is the point of case study. Living with paradox is crucial to understanding. The tension between the study of the unique and the need to generalise is necessary to reveal both the *unique* and the *universal* and the *unity* of that understanding. To live with ambiguity, to challenge certainty, to creatively encounter, is to arrive, eventually, at 'seeing' anew.
>
> (Simons, 1996:238)

Exploring the use of asynchronous discussion forums in an online community involves the analysis of numerous interacting variables that influence the processes and outcomes of participation within the environment. While a number of the variables that are directly observable may be measured using quantitative techniques, others require qualitative analysis. To gain an encompassing view and broad insight of how participation is realised by gifted learners, a case study using both qualitative and quantitative analysis was considered to be the most comprehensive approach to understanding this complex process for this research.

5.3.2 Identification of the case

Merriam (1988) suggests that the case or the 'unit of analysis' can be an individual, programme, group or organisation, situation, concept or whatever it is that we are interested in. She goes on to first cite Smith (1978), who defines the case as a *bounded system,* and then Guba and Lincoln (1981), who suggest that boundaries are set by the nature of the problem to be investigated.

Yin (2003) differentiates case studies into single or multiple-case designs which can be either holistic (single unit of analysis) or embedded (multiple units of analysis). According to his classification, my research design is an embedded multiple-case design, where even though a case study may be about a particular programme, analysis can include outcomes from individual projects within the programme which he calls the embedded units. Thus, for this research, I explored the value or the contribution of the use of online discussion forums with gifted and talented learners using four forums as my cases from all the discussion forums of NAGTY, which was the organisational context from which the four cases were drawn. Within each case I examined participation further by selecting an active-silent and an active-vocal member (discussed in detail on p.232-258) as my embedded cases. I felt that these cases could offer insights both at a micro and macro scale into how gifted learners participated in online discussions, how and what they learnt and which of their needs were fulfilled by this participation. Yin (2003) stresses the importance of returning from the sub-unit levels to the larger units of analysis and then to the organisational context of the study; the search for a greater understanding of each case lead me to recognise the uniqueness and complexity of each of the cases, their embeddedness and interaction with the context.

5.3.3 The criteria and selection process for the case(s)

A useful step in the selection process is to repeatedly refer back to the purpose of the study in order to focus attention on where to look for cases and evidence that will satisfy the purpose of the study and answer the research questions posed. The researcher must determine whether to study cases which are unique in some way, cases which are considered typical or cases which represent a variety of geographic regions, size parameters or other criteria. Stake (1995) contends that case-study research is not sampling research; while it may be valuable to select cases which are typical or representative of other cases it is quite doubtful that the case -study or the cases can be representative. What is necessary instead, he goes on to stipulate, is to choose those cases that lead to maximum understanding of the phenomenon and have easy access. In choosing the cases for this study, the goal was not to select a 'representative' case or set of cases but those that would help to elucidate the process of participation within the online communities.

At the time of selection, the Student Academy of NAGTY offered 4 online categories with a total of 22 forums as shown in Figure 10. In the course of the research this format was changed; some were closed and others added.

Academic Study Groups (4 forums)	**General** (7 forums)	**Programme and Events** (5 forums)	**Other** (6 forums)
Ethics and Philosophy Reading Group Astronomy and Space Classics*	Current Affairs Gifted and Talented Issues Academic and Books Music and Entertainment Sports and Hobbies General Debates	Summer Schools Outreach Experts in Action Aston University HE Highway Durham University HE Highway	Welcome Debates (serious) Council Careers Forum and Website Questions Online Conference Website

Figure 10: Forums offered by the NAGTY Student Academy (2006)

I was mainly interested in the first category which had the academic study groups (ASG). This was because I wanted to explore the potential of the social and intellectual aspects of these types of forums. As I chose three out of the four academic forums for my case studies I was mindful of the fact that it would be easier for me to choose discussion topics that reflected my own educational and professional background (science) and personal interests (reading and philosophy). I felt that I would be able to follow and understand the discussions more fully if I had some prior knowledge of the subject. To see if the participatory exchanges would be of a different nature in a non-academic study group, I also chose one 'general debates' forum which was a place where a wide range of topics was discussed,. I visited several of the remaining forums, especially the one relating to gifted and talented issues, to get a more complete picture of what was happening in the other forums, but these were not coded. The four cases selected as forums were therefore: Ethics and Philosophy, Reading Group, Astronomy and Science and General Debates.

Garfinkel (1969) suggests that in the decision-making process it is important to be aware of the conditions under which initial choices were made and to modify them if necessary, as more information is gathered. This suggestion was kept in mind during a three-month pilot study which was carried out to test the applicability of the coding templates (discussed in Chapter 4) and the suitability of the chosen cases.

5.3.4 Decision process about interpreting and reporting the case(s)

The decision process of how to interpret and report the cases developed gradually as the reporting itself began; Stake (1995) notes that 'Case content evolves in the act of writing itself' (p.93). The desire behind all decisions was to maximise understanding and it was a daunting task to choose what to report from the vast amount of rich data available. While the four cases had several similarities, they also

differed in many ways. It was important to compare them but it was also necessary to get an overall understanding of the community as a whole. Another factor behind the choice was to reduce repetition of similar themes that arose from the cases. In this case-study of how gifted learners participated in the discussion forums, I first wanted to give an account of 'who' the participants were, then 'how' they were choosing to participate in the different forums (Chapter 7), followed, finally, by 'what' this participation looked like by giving examples of their messages and the emergent themes (Chapter 8). Only after several reports was the final one chosen as it was felt that it gave the best most comprehensive picture of how the gifted learners were participating in discussion forums and what potential it held for them.

5.4 The research sample

The four forums that were used as the sample were: Ethics and Philosophy (E&P), Reading Group (RG), Astronomy and Space (A&S) and General Debates (GD). Over the period from March 2005 to February 2006 E&P had 423 members who posted a total number of 509 messages, RG had 652 members who posted a total of 1052 messages and A&S had 786 members who posted a total of 537 messages. All of the above-mentioned messages were used for the sample. GD had 2632 members and because of the vast numbers selective threads (see Table 16 on p.212) were used; a total of 1015 messages were examined. Overall a total number of 3113 messages were coded. A comparison of the sample in relation to the whole NAGTY membership and the overall national population of gifted and talented learners is discussed in Chapter 7 where a further breakdown of the characteristics (age, gender, socio-economic background, type of school attended) of the participating members is presented.

5.5 The research site: The National Academy for Gifted and Talented Youth

As Rossman and Rallis (1998) state, the ideal research site is one where the intensity and amount of data you can generate allows you to answer the research questions fully, where ethical considerations are not overwhelming and where strong relations for current and future research may be forged. NAGTY was such a site.

In the White Paper *Schools Achieving - Success* (DfES, 2001), the government announced its intention to establish an Academy for Gifted and Talented Youth. The Academy, or NAGTY, was a result of this government initiative which was launched in 2002. It was based at the University of Warwick and supported by Johns Hopkins University, Baltimore, which has pioneered such projects in the US since 1979. NAGTY was both a nationally and internationally recognised centre which led, supported and informed the work of teachers and education professionals working to improve gifted and talented education in England. Its primary goals were to bring policy into practice by developing, implementing, promoting and supporting educational opportunities for gifted and talented young people up to the age of 19.. NAGTY aimed to ensure that all children and young people, regardless of socio-economic background, had access to the formal and informal learning opportunities they needed to help them convert their potential into high achievement.

NAGTY had three domains which helped take forward the education of gifted and talented learners. The objectives of each of these domains (The Professional Academy, The Research Programme and The Student Academy) are discussed below in Sections 5.5.1 – 5.5.3.

5.5.1 The Professional Academy

This division worked in partnership with schools, colleges, local authorities, the NCSL (National College for School Leadership) and the Gifted and Talented Education Unit at the Department for Education and Skills. It provided professional development opportunities, and supported innovative practice.

5.5.2 The Research Programme

The objectives of this research centre were to keep an ongoing strong public profile both nationally and internationally by contributing to the research field of gifted education through contributions to international journals, international conferences, Continuing Professional Development (CPD), policy information, implementation and evaluation and other such related activities.

5.5.3 The Student Academy

Each year NAGTY provided OUTREACH activities and summer schools for its members at a number of partner universities across England. The activities included holiday schools, Saturday master classes, university-based weekend conferences (with parallel activities for parents and educators) and twilight taster events. Other resources also helped inform gifted learners, such as, *Aspire*, which was a magazine for NAGTY members and ACHIEVE, an online careers and guidance service. Members also benefited from access to a range of online opportunities which could help them to develop their potential further.

Gifted and talented learners who had been identified by their schools as being in the top 5 per cent of their school population were invited to become members of the NAGTY online community. The forums slowly evolved to include Online Study Groups such as the ones shown below in Table 6. These were virtual learning

environments with experts to guide the discussions for students who shared an interest in a particular subject, albeit not all forums had the same amount of moderation.

Status	Event (click for information)	Provider	Age Range	Places Available	Join Now!	Already Signed Up?
Open	Chemistry Online Study Group	Royal Society of Chemistry	11 - 19	10+	Join Now	Sign In
Open	Classics Online Study Group	University of Nottingham	11 - 19	10+	Join Now	Sign In
Open	Creative Writing Online Study Group	University of Warwick	11 - 19	10+	Join Now	Sign In
Open	Film Studies	Queen Mary University	Yr 11 - Yr 13	More Information	More Information	Sign In
Open	French Online Study Group	Aston University	14 - 19	10+	Join Now	Sign In
Open	German Online Study Group	Aston University	14 - 19	10+	Join Now	Sign In
Open	Modern Foreign Languages Online Study Group	University of Hull	11 - 19	10+	Join Now	Sign In
Open	Online Reading Group	University of Warwick	11 - 19	10+	Join Now	Sign In

Table 6: Online study groups for August 2007
(Source: http://www.nagty.ac.uk/student_academy/online_learning/index.aspx Accessed 8/07/2007)

Members could join as many groups as they wished to as long as there were still places available.. Online learning was through participation in the discussion forums, which were message boards that allowed members to discuss all kinds of topics with each other. It was the potential of this type of virtual learning environment that I wanted to investigate. Having been trained as a teacher for the gifted and talented and having noticed the difficulties these groups of students faced in their schools, I was particularly excited by the opportunities of an online environment which could possibly afford these students privacy, flexibility and space to flourish without any inhibitions.

After examining and agreeing to all the ethical guidelines involved with conducting research online (these are discussed more fully in Chapter 6), and after

almost a whole year of negotiating access I was finally given the go ahead to research the use of online discussion forums with gifted learners.

5.6 The research community

The Academy's membership encompassed secondary-level students between the ages of 11 and 19 who were both resident and being educated in England, and who could demonstrate that they were working in, or had the potential to work in, the top 5 per cent of the national ability range. There was a significant rise in the membership after September 2004; it almost tripled, from 33,500 members in 2004 to over 160,000 members in 2007. Part of the reason for the rising membership was the introduction of personalised learning and the National Register for gifted and talented learners. Since 2006, it has been mandatory for all secondary schools to identify their gifted and talented students in the School Census (DfES, 2007). This was extended to primary schools in 2007. Since 2004 schools have been encouraged to use the services offered by NAGTY to meet the needs of their gifted and talented learners.

In the January 2006 School Census, 353,000 pupils were identified as gifted and talented by secondary schools (DfES, 2007). However, not all of these pupils were eligible for NAGTY membership. This was only granted to the top 5 per cent and was estimated to be about 200,000 by the Department of Education Skills. The following section discusses the type of criteria used to grant admission to the NAGTY community.

5.6.1 The admission criteria for NAGTY members

NAGTY accepted members on the basis of academic performance and potential based on both test and non-test evidence. Test evidence could refer to the SATS (Standard Assessment Tasks) results, CAT (Cognitive Ability Tests) scores, Midyis (Middle Years Information System) Test scores or Yellis (**YEar 11 Information System**) scores, World Class Tests scores, NFER (National Foundation for Educational Research) Verbal Reasoning and Non-Verbal Reasoning Series scores, a test of general cognitive ability which had been administered by a chartered educational psychologist such as WISC (Wechsler Intelligence Scale for Children) or Stanford-Binet IQ Test, GSCE or GNVQ scores or any other university-entrance tests like TGA (Total Grade point Average). Table 7 on the next page shows the required standards for each type of test.

The non-test evidence could be a written reference which clearly indicated the criteria on which it was based from a teacher or other education professional: Any evidence of outstanding achievement in an academic-related activity (e.g. national-level debating competition) or an independent assessment identifying ability in the top 5 per cent ability range by an educational psychologist. In a similar manner, written references could be provided for the (Talent) Arts subjects (Art, Art and Design, Drama, Dance, Music).

Type of test	Score required
KS2 SATS	Combined raw score in the national top 5 per cent of English and Mathematics
KS3 SATS	Level 8 in Mathematics exam or Level 8 in any teacher-assessed subject
CAT	A Standardised age score of 129 or above in one battery (Verbal Reasoning, Non-Verbal Reasoning or Quantitative Reasoning
Midyis Test	A Standardised age score of 129 or above in one battery (Mathematics, Non-Verbal Reasoning or Vocabulary)
Yellis	A Standardised age score of 126 or above
World Class Tests	Merit or distinction
NFER	Standardised age mean score of 129 or above
WISC or Stanford Binet	Performance at or above 95th percentile, BAS GCA standardised score of 126 or above
GCSE/GNVQ	Capped point score from the best 8 subjects of 58 points or above (A*=8 points, A=7 points etc.) or a score of 428 or above where A*= 58 points and A= 52 points, etc.)
TGA	Performance at or above 95th percentile

Table 7: Required test scores for admission to NAGTY

Source: *http://www.nagty.ac.uk/student_academy/joining_nagty/documents/eligibility_criteria.pdf*
Accessed 18/07/2007

5.7 Conclusion

As Freebody (2003) asserts, 'The goal of a case study, in its most general form, is to put in place an inquiry in which both the researchers and educators can reflect upon particular instances of educational practice' (p. 81), this inquiry had a similar purpose, which was guided by two types of research questions. First, the overarching question which helped to identify the field and provided focus for synthesising findings, asked in a broad context about the possible potential of participation in an online community of inquiry for gifted and talented learners. Second, the operational questions assisted to refine and structure the focus of the research and asked about the relational and conceptual dimensions of how participation was realised - whether the online community could meet the social and cognitive needs of the gifted learners.

Case study is a strategy concerned with research taken in a broad sense and including, for example, investigation. The characteristic defining feature is the focus

on a specific case(s) (Robson, 2000). The cases for this study were four forums which included three academic study groups (Ethics and Philosophy, Reading Group and Astronomy and Space) and one general debate forum. These made up a total of approximately 4493 members and 3113 messages. These forums were drawn from the organisational context of NAGTY, which was a government initiative instigated in 2002. Its primary purpose was to increase the awareness of gifted and talented learners by providing relevant guidance to educators and by organising challenging extracurricular activities to help enrich the gifted learners. One of these activities was online discussion forums. It was from these forums that the research sample was selected to investigate participatory exchanges in the discussions. While some researchers (Merriam, 1988; Stake, 1995) see case study as being fundamentally qualitative, Yin (2003) advocates the use of both quantitative and qualitative data collection methods. The methodology adopted for collecting and analysing both the qualitative and quantitative data and the ethical tenets governing this study are discussed in the next chapter.

CHAPTER 6

Methodology 2: Observation Techniques and Data Collection

6.1 Chapter overview

This chapter first presents the various methods used for collecting data, this is followed by details of the analytical procedure that was used to arrive at the findings. Finally, the ethical considerations that directed this research and aspects that helped to establish its trustworthiness are discussed.

6.2. Data-collection strategies

This case study used a mixed-method approach which was able to provide a rich, detailed, in-depth picture of the case (NAGTY), by asking the overarching question, What is the potential of asynchronous online discussion forums in promoting a community of inquiry for gifted and talented learners such that the community is able to meet some of their social and intellectual needs?

This question was addressed by collecting data from various sources. Online participant observation of text messages, previously administered NAGTY questionnaires, semi-structured focus group meetings with the tutors and feedback from presentations, all provided qualitative data which are discussed in Section 6.2.1.

Quantitative data were was generated from two sources. First, secondary data provided by NAGTY about the membership made it possible to get the demographical data of the members and also to explore their participatory patterns. Second, an online questionnaire testing the emerging hypotheses from the qualitative analysis which was administered (n=991) and the data analysed. These sources of data are discussed in Section 6.2.2.

6.2.1 Qualitative data-collection methods

Online non-participant observation of text messages

Participant observation can be used to study most aspects of human existence, especially if the focus of the research is how the activities and interactions of a setting give meaning to certain behaviours and beliefs. Since an alien online presence would have interfered with the general dynamics, producing a possible Hawthorne effect (Mayo, 1924) because of the online setting, the discussions were best observed by me being a silent non-participant observer. The constant presence of lurkers (participants who do not post any messages but visit the site to read – this is addressed in Chapters 7 and 8) in online discussions is a testament to the fact that remaining mute, watching and reading are all acceptable practices in an online community. It is possible to make a distinction between those members that have logged on and participated by posting a message and those who have simply logged on, perhaps read the messages but have chosen not to say anything.

I would have very much liked to have been an active participating member of the online community but ethically it would have meant that I would have to masquerade as a student. If permission had been granted to participate it would only have been as an identified researcher. Once the participating members became aware of my presence, it might have led to many members not responding in their normal way and thus I would have disturbed the whole scenario (Hawthorne effect). The line between non-participant and participant observation is blurred in cyberspace, making the distinctions Murray (2003) draws between spying, mediating and researching almost

redundant. Susan Murray, in her quest to become a sociologist, questions her role as a researcher that mimics a spy, a shill[3] or a go-between.

Regarding the Hawthorne effects and reactivity, it is obviously desirable to conserve as much validity or authenticity in the observed activities as possible, and as this could be done with nearly perfect reliability, given my silent status, I was able to witness interactions that were not altered by my presence. The opportunity to do so is quite rare in social sciences (Lofland and Lofland, 1995) as often a researcher has to account for the deviations from the 'natural' situations that his or her presence may have caused. However, Burgess (1984) contends that although reactivity might seem a disadvantage at first glance, there is much to be gained from actively participating in a research setting: It can provide increased opportunities to get closer to some participants, and to witness additional related phenomena that may not otherwise have been available to the non-participant observers. In spite of this I felt that there was much to be gained by not giving up the rare chance to observe (ethically) a learning venue without disturbing its interactions. However, it is not possible to be 100 per cent sure that this was the case: perhaps there were some members who were conscious that a researcher might be observing them, but given the fact that they were informed of the research aspect of the forum at the very beginning of their membership, it is highly unlikely that it had any effect.

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shill[3]: Using Goffman's (1959) analysis in *The Presentation of Self in Everyday Life* she first makes a distinction between these roles and then concludes that her role is multiple. As a participant observer she was a spy (someone who joins an organisation with the intention of informing), a go-between (someone who learns the secrets of each side and gives each side the impression that she will keep its secrets), and a shill (someone who pretends to be interested in order to get information).

Stake (1995) warns that non-participant observation can be less productive as it depends on second-hand information, such as documentation of activities that a researcher is unable to observe directly; however, this situation does not apply to message boards as the posting of messages is the 'activity' itself. The only way to engage with the online discussions or conversations is by looking directly at as many of the postings as possible in order to understand exactly what is happening.

Hundreds, even thousands, of messages can be posted, so choices have to be made about how to sample the textual history of the forum and/or the community. This can be done in many ways: messages can be sampled by user, subject, thread or date. A longitudinal approach (sampling by date, across time) was chosen for this exploratory study. All the messages posted over the period March 2005 to March 2006 were sampled in the above-mentioned groups. This made it possible to capture a wide range of users and topics discussed; however, the question still remains how large the sample needs to be to be valid? Ideally the sampling window should be large enough to give a natural sense of the posting cycles without cutting short any exchanges allowing saturation until nothing new is emerging, and should be as representative of the community as possible.

The pilot study discussed in Chapter 4, which was used to test the compatibility of the data with the community of inquiry model, was conducted over a period of three months. Even in this short time, a pattern of participatory activities seemed to be emerging. It was therefore felt that a period of twelve months would give an accurate reflection of any fluctuations in both the quality and the quantity of participation due to the time of the year (holidays, exams) for the students. Even in the three-month period some topics were already beginning to repeat themselves to a certain extent,

but it was felt that a whole year would give the opportunity for many new conversations to reach closure and participants to either join in or become inactive. The facilitators were also introducing innovative ideas to increase participation and motivation, and the results of these initiatives would only be evident after a period of time. In order to follow complete conversations it became necessary to look at *all* the messages on the board as some of the later messages made reference there were references made to earlier postings. Some topics were left ongoing until either they were closed officially or died a natural death.

NAGTY questionnaires

Initially I had wanted to administer an in-depth questionnaire to all the NAGTY members to get a better understanding of the gifted and talented members' views on their involvement with NAGTY and to obtain general data about their educational aspirations and future goals. However, since very similar questionnaires (Campbell *et al.* 2006; Mazzoli *et al.* 2005) had already been conducted, I felt that it was unnecessary for me to duplicate their effort, since most of the data I was looking for was already available. It also meant that NAGTY members were not overly burdened with questionnaires. Pertinent information was taken from the Campbell *et al.* and Mazzoli *et al.* surveys and other NAGTY occasional papers to get a more all-inclusive representation of what was being done at NAGTY and of the members.

Focus group meetings

Qualitative focus group meetings ask predetermined questions which are asked in a flexible manner depending on the leader's perception of what is deemed most suitable (Robson, 2002). As the researcher is the research instrument, great

sensitivity and personal skills, such as employing questioning techniques as suggested by Kvale (1996), are called for if worthwhile data are to be collected (Bogdewic 1999; Guba and Lincoln, 1987). According to King (1994, as cited in Robson 2002: 271), qualitative interviews are most appropriate 'where individual perceptions of processes within a social unit – such as a work-group, department or whole organization – are to be studied'.

In addition to keeping the online tutors and other NAGTY administrators updated about the research, focus group meetings with the online tutors were held. The main objective of these meetings was to inform the questionnaire and compare data that was emerging from the coding and analysing process of the messages. As I was coding, several hypotheses began to formulate in my mind. In order to validate or reject these ideas, I based my questions to the focus group participants on them. The meetings usually began with a presentation by me about the research and what stage I had reached, and then discussions followed. As stressed by Lofland and Lofland (1995), an interview – or in this case a discussion guide – was used (see Appendix F) to make sure all the topics that needed answers were covered, and the participants were allowed to speak freely in their own terms with some occasional probes as specified by Zeisel (1984).

This mode of data gathering afforded me the opportunity to meet some of the online tutors face to face and get a hands-on feel of their participation and opinions. It made it possible for me to get their thoughts on such things such as being gifted or talented, the impact of participating on them of the discussion forums or simply being a member of NAGTY. Comments and observations from these meetings have been included in appropriate places in Chapter 8.

6.2.2 Quantitative data-collection methods

NAGTY database

General statistical descriptive data such as age, gender, socio-economic background, ethnicity, type of schools attended, number of messages posted and viewed by each member were requested from the NAGTY database for all the members in the sample. The person in charge of the technology department generously extracted the relevant bits of information which was extremely valuable in determining how representative the sample was of the total NAGTY membership and nationally. It also helped clarify the notion of what active participation might mean for this community. Active participants comprise of silent members (those who only read) and vocal members (those who read and post messages). This is discussed in detail in Chapter 7. All the statistical information was analysed using SPSS (Statistical Package for the Social Sciences).

Online questionnaires

Survey research is an important and commonly used area of measurement in applied social research. The broad area of survey research encompasses any measurement procedures that involve asking questions of respondents. Questionnaires and interview schedules are the most widely used type of instruments for surveys (Fraenkel and Wallen, 1996). Oppenheim (1992) explains the job of a descriptive survey as one of fact finding: how many (what proportion of) members of a population have a certain opinion or characteristic or how often certain events occur together. Such surveys provide information for action. Surveys may be used to collect qualitative data, and are not restricted to either quantitative data or statistical analysis (Fife-Shaw, 2000). Survey research has changed dramatically in the last ten

years and one of the newer methods includes online questionnaires which are self-administered. However, there are both advantages and disadvantages associated with this research instrument.

The main purpose of the online questionnaire (see Appendix H) for this study was to try to compare findings from the qualitative content analysis. The questionnaire (n=991) contained some Likert-type and some open-ended questions and was administered to all the active members from the Reading Group, Ethics and Philosophy and Astronomy and Space forums. For the Debates group a purposive representative sample (20 per cent of the total membership of this group) stratified according to gender, age and ethnic origin and participation was chosen. The response rate of 307 members (31 per cent) was considered adequate to represent all the forums since the questionnaire had been sent to *all* the active members. The precursors to the design and structure of the questionnaire were existing literature, personal experience of being a teacher of the gifted and talented, a NAGTY questionnaire given in summer 2005, the emerging themes from the content analysis of the archived text messages and the focus group meetings with online tutors (See Appendix G for the letter which accompanied the questionnaire inviting the members to participate).

The questionnaire explored two main themes that surfaced as I coded the messages. The first one was relevant to the ways the members chose to participate. Questions regarding their method of participation – 'reading' versus 'reading and posting' messages – asked whether they felt they learnt anything from just reading messages, what stopped them from posting a message, their feelings if they did post a message and their logging patterns. The second theme was related to community and membership. Questions surveyed members' feelings about their engagement with the

forums, the role of the facilitator, about the community and whether it helped to meet any of their needs. For each question they were given several possible answers to choose from and if none of them applied members were given the opportunity to give their own answers or add to the existing ones their own comments. The given choices along with the findings and discussion, have been included in appropriate sections in Chapters 7 and 8.

6.3 The analytic procedure

> The iterative process whereby data analysis feeds into subsequent data collection with this then stimulating further analysis is a feature of the analysis of virtually all ethnographic studies which are typically exploratory.
>
> (Robson, 2002 :487)

Generally, the analytical procedure in this study involved what Miles and Huberman (1994) claim are common features of qualitative analytic methods: annotating and coding data, identifying commonalities and differences and gradually elaborating claims. One of the many approaches for analysis of a qualitative flexible design study, such as this one, is the template approach (Driscoll, 2000). In this approach, the key codes are established either on an *a priori* basis derived from theory or a research question or from a preliminary observation of the data. These codes then serve as a template for data analysis; the template may be changed as analysis continues. In the next stage, text segments which are empirical evidence for the categories are assigned. The template approach, joint collection, coding and analysis are an accurate description of the initial analysis procedures for this study.

The first stage of the data collection involved getting all the threads of discussion forums from the NAGT website. The advantage of having the field notes already documented was balanced by the substantial amount of time required for the preparation of the data. Using a hard copy of the transcripts from the online

discussion forums, each message was first coded using unique identifiers for all staff and student contributors to ensure anonymity and confidentiality. Additional precautions for online data, as suggested by (Brem, 2002; Stemler 2001) were taken: removal of user names, appended signature files, quotations, graphics, post embedded identifying information and any other idiosyncratic inclusions that could identify a participant. This process was to ensure pseudonymity and anonymity, one of the ethical principles that were followed for this study. This principle and other ethical considerations such as informed consent, privacy, risk of any harm and confidentiality are discussed later in this chapter. The subsequent texts were then imported in rich text format into the qualitative data-analysis software package called MAX $_{QDA}$. This software enabled organisation of the vast amount of data and created a searchable database.

The next step involved entering all the categories and codes specified by the community of inquiry model (Garrison *et al.* 2000, 2003) into the software. A pilot study (see Chapter 4) which involved coding messages posted over a period of three months followed. I 'tagged' the messages which were imported in their original chronological threaded format. The *unit of analysis* chosen was the message, where an entire message is assigned to one category. Rourke *et al.* (2000) advocate the use of message units, as this procedure is less time-consuming and facilitates unit reliability; however, this unit has been characterised as alternately too large or too small to adequately characterise a single item of data. Since it is possible that a single message might exhibit characteristics of more than one category, I chose to code each message with more than one category if required. Even though some messages could have been assigned to multiple categories, an arbitrary limit of three per message was set. The three main key categories were chosen after careful examination of what the

message was conveying. Using the message as a unit of analysis has two main advantages: it is easier to identify objectively making it possible for multiple raters to agree perfectly on the total number of cases; and it produces a controllable set of cases (Rourke *et al.* 2000). Even though I had theoretically derived codes, I entertained as many analytical possibilities as possible, and generated additional codes without overtly integrating or containing codes along a single framework.

Analysis operated at three levels. The first level of analysis began with the initial reading of the transcripts during which I became familiar with the data. Following the suggestions by Emerson *et al.* (1995:142-160) I constantly read and reread the transcripts since there is no substitute for knowing the data well, and thinking about it and what it might be telling you. I constantly asked myself, 'What are the data telling me?'; 'What do I want to know?' and 'What is the relationship between the answers to these two questions?' (Srivastava, 2005). Any immediate substantive and methodological responses, formed the basis of memos and were recorded both in the software (linked to the data source) and in a separate document. This engagement with the recorded data and a broad range of readings, academic and non-academic, led to the emergence of 'sensitizing concepts' (Blumer, 1969:148) that shaped and progressively focused the research questions.

As research becomes progressively focused, Wolcott (1994) suggests that there is a shift from an initial concern to describe events and processes to interpretation. To accomplish this, I observed and analysed the interactions for patterns of thoughts, action and behaviour – to enable me to understand how participation was realised in this community and how these patterns might be leading to the development of higher order thinking skills. Theories, structuring concepts and nuances derived from 'playing' and 'looking' at the data from different perspectives

prompted questions that led to the modification of the templates. This was not an exercise in grounded theory (Glaser and Strauss, 1967), but analysis did have grounded qualities in the emergence (through purposive interaction between the researcher and the data) of categories or concepts that had not previously been considered.

Robson (2000:329) advises putting the research questions first at all times, and refining them through pilot work which led to specification of the coding scheme. The pilot study brought to light the changes required in the existing codes. This resulted in a new template being developed (this process has been described in Chapter 4). Once the alterations had been finalised, the codes were re-entered in the software package. To increase the reliability of the study another coder was trained and an inter-coder reliability was established before beginning the coding process again. This is discussed in more detail later in this chapter (p.204 and Appendix Q).

In an ethnographic study Wolcott (1994) suggests three steps in the next stage of analyses and transformation of data: description of the culture-sharing group, analysis of themes of the culture and interpretation. Quantitative statistical analysis, using SPSS, of the questionnaire responses and the member data from the NAGTY database helped to draw up a holistic picture of the participants and their perceptions of participation in the community. Further, heeding Wolcott's advice, analytical procedures, such as the constant comparative method 'code-and-retrieve', were followed.

Emerson *et al.* (1995:160-168) provide a useful sequence of three steps in which to explain the use of these analytical devices. First, partly using MAX $_{QDA}$ and partly by hand on a hard copy, I engaged in focused coding (Emerson *et al.* 1995:160). Here, I reread broadly coded sections, compared and contrasted passages

with previously read sections, hypothesised the relationship between incidents and attempted to synthesise and test this relationship by creating and re-creating refined themes that categorised the data (Glaser and Strauss, 1967:101).

Using the software functionality of retrieving assigned segments to codes, themes were developed that showed how the community members realised participation and how this participation led to the development of higher thinking skills. These data were reread, compared to each other and recoded and organised under the broad category of 'Sense of community.' Further iterations led to the emergence of sub-categories like 'self-disclosure', 'sense of presence' and 'identity'. I also used the program to search for a single word or phrase across the entire dataset, for example, 'I think …', 'I believe …' or other such phrases that exemplify critical thinking. This focused coding procedure was complemented by the writing of integrative memos and discussions with colleagues, my supervisors and other faculty members, in which I attempted to articulate and build arguments about the range and nuance of generated conceptual structures and themes (Emerson *et al.* 1995:162). For example, I developed the idea of 'online space control issues' by writing integrative accounts of all the participating members in the Ethics and Philosophy forum threads to see who was participating, how many times and who responded. I also did a few case studies to study the patterns of participation of the most active members to see which other forums they were visiting compared with the ones I was using in my research. I tried to compare emerging inferences with other sources; other threads, other characters, other places and across transcribed notes of focus group meetings and online questionnaires. I was aware of the limitations as a human analyst and tried to limit validity of this procedure resulting from systematic bias, mutual confirmation, false convergence and assumption of a fixed social reality (Hammersley and

Atkinson, 1995:231). The strength of this sort of analysis, however, lies in that it can deal with a complexity which may not be achievable when using machines.

The final step in analysis was generating theory or other research products (descriptions, explanations, etc.) directly relevant to the data (Emerson *et al.* 1995:166). I engaged in an iterative process of synthesising, amalgamating and integrating external frameworks such as Bruner's notion of scaffolding and Vygotsky's zone of proximal development with internal structures and themes such as giftedness and meaningful online learning experiences. I used these external frameworks to visualise higher level relationships, and tried to articulate these patterns in ways that perhaps corresponded to other accounts in the literature. This led to a conceptualisation of an online pedagogy for the gifted and talented learners.

Findings and outcomes reflect the researcher's insight, imagination, judgements, and interpretations. Different researchers might construct different categories in analysing data from the present study, or use the same data to address different research questions. As Dey (1993) argues there is no single set of categories waiting to be discovered in qualitative data analysis. Instead of subjecting outcomes to external replication he suggests the procedures of data generation and analysis should be described in sufficient detail so that judgements can be made about them, and that evidence should be presented to support the claims made. The main aims of the analyses were to orient towards the research questions, focus on relevant data and attend to the links between claims and evidence.

In order to evaluate the outcomes of the analyses and to make sure that they were not accepted too hastily and that the analysis was complete, the following questions were asked: Had the analysis addressed the research questions? Were all claims related to specific evidence? Had all potential difficulties in interpreting the

meaning of data been identified and addressed such that only those interpretations in which the researcher had sufficient confidence were used as the basis of claims? Did the current analysis account for most of the relevant data? (Hopwood, 2006).

The next section discusses the ethical tenets that presided over this research.

6.4 Ethical principles in online educational research

The Internet has become an important and rich medium of communication in modern society, with over one billion Internet users in the world with a rate of usage growing at over 200 per cent (European Internet Statistics, 2007). Its increased use and accessibility have led to a burgeoning of cyber communities, where people of like minds and common interests transcend geographical barriers and communicate with one another on a range of subjects, some trivial, some controversial and some intensely private (Schrum, 1995). Consequently, an incredible amount of social and behavioural information has potentially become accessible on the World Wide Web which has drawn the interest of many social researchers.

The relative ease (shorter amount of time required and the low cost with which this medium permits studies to be carried out) of using online data also raises concerns about the ethical, legal and technical aspects associated with this rapidly increasing research area.

When analysing ethical problems of any type of research, it is useful to have some existing guidelines as a starting point. In this section I discuss the relevant standards of the BERA (British Educational Research Association, 2004) guidelines, and Ess and AoIR (Ethical Decision-Making and Internet Research Working Committee recommendations, 2002) that might be applicable for online research. I

argue that even though, at one level, the problems of online research are very similar to those we find in traditional areas of social scientific research, there are still some issues that are unique to research online.

6.4.1 Ethical tenets guiding this study

The following set of guidelines, underpinning the operating principles in this study, were drawn from published research (Brem, 2002; Johnson, 2001; Hewson *et al.* 1996; Schrum, 1995) and ethics board recommendations (Frankel and Siang, 1999; Ess and AoIR, 2002; BERA, 2004). These guiding principles were instrumental in providing me with direction in designing and conducting this study.

According to a report by the AAAS (American Association for the Advancement of Science) for OPRR (Office for Protection from Research Risks), the agency responsible for oversight of federally funded research by the US Department of Health and Human Services (Frankel and Siang, 1999), there are three fundamental principles which govern any research involving human subjects:

- *autonomy*: this requires that subjects be treated as independent people with rights, who must be fully informed about the risks and benefits of the research;
- *beneficence*: this requires that there must be maximum benefits and minimum risks involved for the subject. This entails respecting their privacy and providing as much confidentiality as possible;
- *justice*: this requires that any risks and benefits must be balanced between all group(s) or individuals involved in the research.

According to Brem (2002), researchers working with online exchanges of information must provide the same levels of protection as they would in the case of

face-to-face exchanges, including clearance with an institutional review board, privacy and confidentiality assurances and informed consent. They should also have a rationale for any adaptations or deviations they decide to make in order to establish credibility with editors and peers and allow others to adopt, recycle and refine their approach. The BERA and AoIR guidelines are relevant to online research at different levels. First of all, it is clear that the obligations to respect individual integrity and autonomy, which the guidelines identify as fundamental, are equally relevant when considering how to treat subjects in online research. The same holds true for the obligations to obtain informed consent, inform subjects, respect their privacy and close relations. Hence, with respect to the fundamental research ethical considerations the step-by-step measures listed below were taken in this study.

Public or private

Guidelines in the physical world allow researchers to be exempt from obtaining consent for data collected from the public domain: Such as television, public records, radio, printed books, conferences or public spaces such as parks. Similarly, in the virtual world of Internet no consent is required to quote or analyse online information if it is officially publicly archived (Frankel and Siang, 1999;7). Categorisation of archives as public or private depends largely on the accessibility of the data files. Factors that may be helpful in determining the accessibility are: no password is required for archive access, no site policy prohibits it and the topic of discussion is not highly sensitive. An example of this is data from online newsgroups and Usenet support groups which are easily available to anyone, and, if archived, within reach of anyone for a long time after the messages were posted. However, it is still the responsibility of the researcher to be sensitive to the perceived privacy of the

participants, even if a domain is public. For example, on forums like scholarly discussions, there would be an area of low perceived privacy because participants are looking for publicity. In comparison, within support groups that discuss medical or psychological conditions, the participants would understandably expect their messages to remain private even if the support group was in a public arena.

> There is, then, an inverse relationship between sensitivity and accessibility: more sensitive information that is allowed to flow in a channel, the less open to access usually is. And the more accessible a channel is, the less suited it is for the flow of sensitive information. (Elgesem, 2002:10)

Nevertheless, there are three other means of protection of sensitive information which compensate for the relative accessibility of the channel: first, by the anonymity provided by the use of nicknames; second, by the ephemeral nature of the information; and third, by a climate of mutual respect and trust among the participants, entailing unwritten rules of confidentiality and respect for privacy (Elgesem, 2002). It was determined that the discussion forums to which I would gain access were private, as they are password protected, with a high expectancy of privacy within the community. Access was granted by the administration after six months of negotiations, and careful investigation of my background, credentials and status as a doctoral research student at the University of Oxford.

Informed consent

The general procedure of obtaining informed consent, which recognises the autonomy of research participants by sharing with them the power of decision-making practice, is a fundamental element of the ethical discourse. For online research, consent may be obtained electronically if the risks to the participants are low and they are 18 years of age or older; otherwise written consent is required (Frankel and Siang, 1999).

All the members of the gifted community were made fully aware of the fact that their archived texts might be used for research at the time of their joining the community. Written informed consent from them and their parents was acquired at that time. In addition there was a policy that for each project they would be asked to reconfirm their willingness. Participation was not obligatory and was purely on a voluntary basis. Data from those who chose to opt out was fully protected and not used. So, for the content analysis of the archived texts and the online questionnaire the members were advised about the research and its purpose, once again making it clear that their participation was voluntary and in no way undermined their status as a member.

Pseudonymity and anonymity

Because online conversation is relatively new and unfamiliar, and takes place at a distance, it is relatively easy to overlook possible ethical violations. People may not be fully aware that their conversations could be made public, may not realise that they are being monitored or may forget that they are being monitored because the observer's presence is virtual and unobtrusive. Some participants may feel relatively invulnerable because of the distance and relative anonymity of online exchanges and may use these protections to harass other participants. In addition to the usual procedures in traditional research for anonymising data (removing names and addresses) there are some additional indicators that have to be removed in order to fully anonymise data collected from online exchanges. For this study every post was scoured for both intentional and unintentional indicators of identity that might allow a participant to be identified. Measures were taken to remove:

- the obvious identifiers: names, pseudonyms, addresses, URLs;
- the embedded identifiers: user names, references inside a message to someone's name or email address;
- signature appendages to messages;
- any quotations, graphics or pictures, or any distinctive, personal identifiers;
- any material to be quoted in the qualitative analysis and reporting by checking for external Internet archiving by search engines;
- potential risks of violating privacy and confidentiality.

Regardless of which ethical stance a researcher chooses to take, participants should be protected from undue intrusion, harm or distress and participation in the research should be voluntary. Even though many of the ethical problems of online research are very similar to those of traditional research, some are solely due to the particular problems that are raised in relation to the online security of the personal information of participants. There is, for example, an elevated risk of exposure which can surface at different stages of research, such as data gathering, data processing, data storage and dissemination. This may be due to a lack of comprehension of technical knowledge about the storage capabilities of Internet technologies by both parties. Privacy and confidentiality can be compromised during data transmission and storage. Some instances of this taken from the Ess and AoIR (2002) guidelines are listed below:

- In online surveys there is an increased risk of identity exposure as responses are being transmitted via the Internet. There is a possibility of emails being sent to the wrong person when a participant is sharing an e-

mail account or is not the owner of the computer that they are using to communicate from which the email is being sent?.

- Participants may not be aware that there is a record of the exchange in a cache somewhere on their system or that it is saved in their Internet service provider's server's log files. As data are accumulated and stored over the years, outdated or poorly designed security measures may create more opportunity for risky exposure. People also tend to become more open online, and may reveal more than they would in person (King, 1996). Any material to be quoted in qualitative analysis and reporting should be checked for external Internet archiving by search engines.

Furthermore, on the Internet, group discussion formats make it relatively easy for researchers to engage in covert or unobtrusive observation. Participants may remain unaware that their messages are being analysed until the results of the research are published. If results are published in such a way that members of a virtual community can identify their community as the one studied without their knowledge, psychological harm may result (King, 1996).

The participants of this study were not exposed to any risk due to any of the above categories. Although I was a known non-participant observer, whose presence was probably forgotten very quickly, I don't believe that it involved any element of risk to the participants. At no time was I in possession of their personal emails, and all that they had to say was already available to the tutors, as each forum is moderated and each message is only allowed after careful scrutiny of the content. Also, because of the academic nature of the discussion forums, the data were not of a sensitive nature.

Other general concerns about conducting research on the Internet raise questions about data-sampling techniques and the validity and reliability of the data collected. It is quite easy to mislead others about one's geographical location, gender or race. The reality may be that the research population is skewed in gender, race and geographical distribution (Waskul and Douglass, 1996). This could lead to incorrect findings which, in turn, may misguide policy. According to a report of the US Department of Commerce (1999), National Telecommunications and Information Administration, '*Falling through the Net: Defining the Digital Divide*', studies have shown that there is a possibility of a racial and economic divide among Internet users. This raises issues of non-representative sampling. Fortunately, for me, I was not looking at an unknown population. The members and their descriptive data about gender, age, ethnic origin, socio-economic status and type and location of school attended were available, thus making the above concerns invalid for this study.

In summarising the discussion on ethical considerations, it would seem that the ethical problems associated with online communication are not completely new but somehow stretched or different versions of known conventional notions of respectability and duty. This leads to a distortion of the boundaries that have been set by classic sociological thinking.

Applying the principle of justice to Internet research is based in part on identifying the benefits and risks of the research and assessing how they are distributed. After careful contemplation of any possible physical or psychological harm coming to anyone as a result of this research, no identifiable problems were foreseen. The study of online transcripts seems to present little danger of harm; much, however, is seen to be gained from a better understanding of the learning

processes occurring within an online community in order to improve their effectiveness and, subsequently, their usefulness and worth.

6.5 Trustworthiness and Rigour

Lincoln and Guba (1985) equate establishing trustworthiness in research with its soundness, which is the ability to meet the tenets of quality. Table 8 shows the four general criteria the authors suggest for the evaluation of research and then expands on each from both a qualitative and quantitative perspective. In Sections 6.5.1 – 6.5.4 I first describe what the terms in the table below refer to and then in Section 6.6, I explain what measures were taken to establish each in relation to the trustworthiness of this study.

Criterion	Qualitative approach	Quantitative approach
Truth value	Credibility	Internal validity
Applicability	Transferability	External validity
Consistency	Dependability	Reliability
Neutrality	Conformability	Objectivity

Table 8: Criterion for establishing trustworthiness (Lincoln and Guba, 1985)

6.5.1 Credibility /Internal validity

Credibility is gained when the research inquiry is able to demonstrate that it was conducted in a manner that reflects the participants and settings, when it is reported with in-depth description embedded in data and when the inquiry is carried out over a prolonged time period. Internal validity deals with the question of how one's findings match reality - which is difficult to capture - and questions whether what has been observed or measured is what the researcher believed they were observing or measuring (Merriam, 1988). The measures taken to ensure internal validity for this study are discussed in Section 6.6.

6.5.2 Transferability/ External validity

Transferability of research is established when the findings of the research inquiry will be useful to others in similar situations, with similar research questions or questions of practice. This is dependent on articulation of theoretical framework/assumptions, description of sample, setting and thick description of findings. External validity is concerned with how generalisable the findings are.

A weakness associated with case-study research is that there is a fundamental trade-off: depth of representation in exchange for generalisability. The trade-off is neither equal nor particularly clear cut. Despite the fact that they cannot be representative, case studies can provide more than simply idiosyncratic understanding. I prefer not to think of this as 'generalisation', because of the connotations of that term for statistically significant large-scale surveys. Rather, the issue is what case studies can tell us about situations beyond the actual case that was studied. This is discussed further in terms of a limitation in Chapter 9.

6.5.3 Dependability/Reliability

The dependability or consistency of a research inquiry is the closest notion to reliability and is an attempt to account for changing conditions in the phenomenon and changes in design created by emerging understanding of the setting. Working with a computer and having computer-printed extracts and coding can provide a false sense of objectivity. The quality of the research is still dependent upon the quality of the researchers' efforts in checking the accuracy of transcripts, the definitions of categories for coding and the accuracy of applying those definitions.

As a measure of reliability in the coding procedures, in this study, one other coder was trained and the percent agreement (Appendix Q) between the raters was

calculated (researcher included). Intercoder reliability is a widely used term for the extent to which independent coders evaluate a characteristic of a message or artefact and reach the same conclusion. The more specific term for the type of consistency required in content analysis is intercoder (or interrater) agreement (Tinsley and Weiss, 1975, 2000). A distinction is often made between the coding of manifest content, information 'on the surface', and latent content under these surface elements. Potter and Levine-Donnerstein (1999) note that for latent content the coders must provide subjective interpretations based on their own mental schema.

During the training process I asked a colleague of mine to code approximately 100 messages with me. After a process of familiarising him with all the categories and their indicating codes we discussed each message before assigning it a particular code. Towards the end of the 100 messages we were agreeing on most of the codes. At this point, we each took the thread 'What is betrayal?' from the Ethics and Philosophy forum and coded all the messages independently. Out of a total of 125 messages that were coded, we were in agreement on 106. The percent agreement was calculated using the following formula;

Percent agreement: PA_0 = Total A/n = 106/125 x 100=85 %

where A is the total number of cases that were coded the same way by the two raters and n is total number of cases.

6.5.4 Conformability/Objectivity

The conformability, or what used to be called the neutrality or objectivity, of a research inquiry is established when the findings of the study can be confirmed by another study. This shifts the evaluation from any of the researcher's biases or prejudices and places it on the data. The data confirm the general findings and lead to the implications.

For a combination of reasons that have been addressed on p.366-367 researcher expertise, knowledge and intuition is a vital part of the case-study approach. The researcher has to choose what questions to ask, how to ask them, what to observe, what to record, draw out issues of interest from the data and construct stories about those issues and/or people. In this way, case-study researchers are constantly making judgements about the significance of the data. For these reasons, a key determinant of the quality of a piece of case-study research is the quality of the insights and thinking brought to bear by the particular researcher; and the construction of the data around issues he or she deems to be important. No matter how rigorous one strives to be, this means that the research is not, and cannot be, completely objective, nor can the researcher easily make transparent all the judgements that were made.

6.6 Establishing trustworthiness for this study

The case-study approach to exploring online forums as a methodology must be equipped to resist the subjective manipulations of the researcher. Only thus is the process safeguarded, and the credibility and validity of the case study guaranteed. A key element in this protection is to define rigorously the aims of the analysis, the theoretical framework and the analytical criteria. This has been a concern through this research in presenting the theoretical foundations of the proposed analysis.

This research also seeks trustworthiness by being transparent about its assumptions: Methodological rigour does not prevent the adoption of a point of view and this study certainly holds a cognitive view which values collaborative approaches to the construction of knowledge. This is not an unpopular view of teaching and learning today. Secondly, the study assumes that the *replying to*, direct address to or

answer to one message by another on the message board can be taken for interaction, indeed for collaboration in the construction of knowledge. Finally, the whole undertaking is posited on the idea that written text can transparently reveal the thinking going on behind it. Much work, from Vygotksy (19 has substantiated the very close link between thought and language. Finally, use of descriptive data and verbatim quotes from the actual discussions were used to back up all claims in the thesis, and a computerised 'audit trail' kept so that any discussion comment can be traced back to its source to prove authenticity.

With a desire to become a conscientious researcher I employed the following strategies to establish trustworthiness:

- tried to have structural congruence between the research questions, the theoretical and philosophical assumptions and the components of the method;
- made sampling appropriate by allowing saturation and replication over a prolonged period of time;
- collected and analysed data concurrently;
- analysed all data with integrity and honesty;
- reported everything with sensitivity, creativity and flexibility;
- compared the data collected from the archived text messages with participant checks through online questionnaires and semi-structured interviews with the online tutors to ensure convergence of multiple data sources (Denzin, 1978);
- asked peers to review the study and engaged in critical reflexivity;

- established an interrater agreement with at least one more coder to make sure that the coding templates of this study were being used correctly and effectively. (Appendix Q).
- presented papers related to various areas of the inquiry at several international conferences in order to get feedback by other top researchers in the field of online communication and gifted and talented learners.

6.7 Conclusion

The aim of this chapter was to outline how the data were collected and analysed. The mixed-method approach used in this case study involved both qualitative and quantitative data-collecting methods. Analysis of text messages, previously administered questionnaires by NAGTY and focus group meetings with tutors helped to provide rich qualitative data. Online questionnaires and secondary data provided quantitative data. Data collected from all of these different sources helped to reach various levels of analysis that allowed me to arrive at suggestions for answering the operational research questions and then synthesise these findings for the overarching research question of this study – What potential does an online community for gifted and talented learners have to help them to meet their needs? Lastly, access, guiding ethical principles and steps taken to establish trustworthiness (credibility/internal validity, reliability/dependability, transferability/external validity and conformability/objectivity) were discussed.

The next two chapters discuss the findings. While Chapter 7 focuses on giving the basic background of each of the forums (how they are run, what they offer, what the characteristics of the members are and what it means to participate actively),

Chapter 8 employs the three dimensions (relational, conceptual and pedagogical) developed in the conceptual framework to give a holistic description of how participation is realised in the online community.

CHAPTER 7

NAGTY Online Discussion Forums: Membership, Operation and Participation

7.1 Chapter overview

The first operational research question underpinning this study asked how participation was realised in this gifted online community. The research addresses this question in this chapter by first discussing the findings in light of data emerging from the analysis of secondary data that was provided by NAGTY. This led to an understanding of two main aspects of the participating members in each forum:

1. 'Who' the members were in terms of their age, gender, socio-economic and school background and how each forum functioned. This is addressed in Section 7.2 'Ethics and Philosophy forum' (E&P); Section 7.3 'Reading Group forum' (RG); Section 7.4 'Astronomy and Space forum' (A&S) and Section 7.5 'General Debates forum (GD). These sections also helped to define the sample in terms of the participants, the discussion threads chosen and how representative the sample was compared to the overall NAGTY and national population of gifted and talented learners. Section 7.6 provides some additional member characteristics for all the forums.
2. 'How' the members participated (frequency and type of participation). The concept of 'active participation' is introduced in Section 7.7 which describes the two main ways the members chose to participate: by being either 'active-silent members' (Section 7.7.1) or 'active-vocal members' (Section 7.7.2). In order to substantiate any observations relevant analysis of responses from the online questionnaire are included. When quoting a response I have used pseudonyms and 'Q' which designates the questionnaire as the source.

Next, the chapter focuses on monthly participatory activities of some members, observed over a period of a year, by presenting case studies (Section 7.8). It then examines the daily logging patterns (Section 7.9) of one active-silent member

and one active-vocal member from each forum. This detailed analysis helped to elucidate not only the general patterns of participation over the year, but also to find evidence that members who were reading were following the threads with interest and possibly building a knowledge base. Furthermore, the analysis of the logging patterns and case studies also helped to address the second operational research question – what evidence is there that the students participating in an online community of inquiry develop higher order thinking skills?

7.2 Ethics and Philosophy forum (E&P)

7.2.1 Age and gender

During the time period this sample was taken the Ethics and Philosophy forum had 423 members. As shown in Table 9 on the next page, there were 135 males (32 per cent) and 288 (68 per cent) females. The mean age was 16 years, and the mode 17 years. Further breakdown of the age and gender revealed that there were 21 (5 per cent) members between the ages of 12-13 of whom 4 were males and 17 females; 207 (49 per cent) members were between the ages of 14-16 years of whom 62 were males and 145 females; 170 (40 per cent) members were between the ages of 17-18 years of whom there were 113 males and 57 females; and 25 (6 per cent) members were between the ages of 19-20 years of whom there were 12 males and 13 females.

	Total Number Of Members	Males		Females		Mean Age (Yr)	Mode (Yr)	Age Group	Males		Females		Total	
E&P	423	135	32 %	288	68 %	16	17	12-13	4	1 %	17	4 %	21	5 %
								14-16	62	15 %	145	34 %	207	49 %
								17-18	113	27 %	57	3 %	170	40 %
								19-20	12	3 %	13	3 %	25	6 %

Table 9: Age and gender for Ethics and Philosophy forum

7.2.2 Selecting the sample threads

Each month a 'question of the month' (QOM) with some general background information about the topic was posted by the facilitator, and members were invited to discuss the issue at hand. As time progressed, several other ideas which originated from the members' suggestions took root and new topics were introduced. For example, the Media Microscope I (MM I) began in August 2005. I chose to look at each 'question of the month' as it appeared to me to be the most stable feature in the forum at the time. Table 10 on the next page shows the names of the topics chosen for each month (red) along with the number of posts and views or reads. The forum tracking which showed 'views' on the system was implemented in September 2005. For most threads after this time, the figures for the number of 'views' and the number of 'reads' was the same. However, for older threads it was possible that the number of views was different to the number of reads. This applies to all the forums. In total there were 772 messages posted, out of which 509 messages (65 per cent) were coded.

Month	Topics Discussed	Number of Posts	Number of Views[1]
Mar 2005	QOM: Why do we have to be told to protect our planet?	15	1
Apr	QOM: Is science true because people believe in it, or do people believe in science because it is true?	95	1
May	Questionnaire feedback	0	1
June	QOM: Should life be preserved?	55	0
July	QOM: When is violence justified? July Essay Challenge: Man is a political animal. Discuss.	33 1	46 9
Aug	QOM: Should the government be able to regulate the reproduction of the species? MM I: Do societies need role models?	58 17	0 42
Sept	MM II: Should life be valued above all else? QOM: Do we have a moral obligation to help people in need?	24 36	114 40
Oct	Media Microscope III: Are teenagers out of control? QOM When are you in control of your life?	24 66	129 13
Nov	QOM: Is anyone else alive? Media Microscope IV: Do we need our faces?	48 18	71 154
Dec	QOM: Is acting for the greater good a 'good' thing to do? Do animals feel? World religion Media Microscope V: Whose responsibility?	39 10 58 13	291 78 380 121
Jan 2006	QOM: What is betrayal? Media Microscope VI: Are the Jedi moral beings?	34 13	235 130
Feb	Should under 18s be recruited for the army? QOM: Is punishment evil? Media Microscope VII: Is prohibition morally wrong? Descartes Homework - views Essay Challenge - Is cloning wrong?	27 30 12 27 13 6	160 262 107 235 119 152
TOTAL		772 (509)	2891

Table 10: Ethics and Philosophy forum (March 2005-February 2006)

1 Number of views and posts as of 19/03/2006

7.3 Reading Group forum (RG)

7.3.1 Age and gender

During the time period this sample was taken, the Reading Group forum had approximately 652 members. As shown in Table 11 on the next page, there were 159 (24.6 per cent) members who were males and 493 (75.6 per cent) members who were females. The mean age was 15.5 years, and the mode 15 years. Further breakdown of the age and gender revealed that there were 82 (12 per cent) members between the ages of 12-13 years of whom 28 were males and 54 females; 363 (55 per cent)

members were between the ages of 14-16 years of whom 88 were males and 275 females; 183 (28 per cent) members were between the ages of 17-18 years of whom 37 were males and 146 females; and 24 (4 per cent) members were between the ages of 19-20 years of whom 6 were males and 18 females.

	Total Number Of Members	Males	Females	Mean Age (Yr)	Mode (Yr)	Age Group	Males	Females	Total
RG	652	493 25 %	159 75 %	15.5	15	12-13	28 4 %	54 8 %	82 12 %
						14-16	88 13%	275 42 %	363 55 %
						17-18	37 6 %	146 22 %	183 28 %
						19-20	18 3 %	6 1 %	24 4 %

Table 11: Age and gender for Reading Group forum

7.3.2 Selecting the sample threads

Each month two books of the month were assigned to be read by the facilitator. These books were chosen from a list suggested by the forum members. The discussion was usually started by the facilitator with some leading questions to begin a discussion. As time progressed, several other ideas which originated from the members' suggestions took root and new topics were introduced. For example, Creative Writing was an offshoot from this forum. Although there were many other discussion topics, I chose to look at messages posted for both the books for each month as this appeared to be the most stable feature of the forum. Table 12 on the next page shows the names of the books selected for each month along with the number of posts and views. A total of approximately 1052 messages were coded for this forum.

Month	Topic	Number of Posts	Number of Views[1]
Mar 2005	Private Peaceful	37	2
	The Great Gatsby	16	1
Apr	The Heart is a Lonely Hunter	13	1
	The Catcher in the Rye	76	2
May	Joy Luck Club	14	1
	Far from the Madding Crowd	83	0
June	The No.1 Ladies Detective Agency	24	0
	The Hitch Hiker's Guide to the Galaxy	155	1
July	All Quiet on the Western Front	41	0
	Slaughterhouse 5	14	2
Aug	The Fellowship of the Ring	48	1
	My Family and Other Friends	10	0
Sept	Things Fall Apart	51	4
	Cry, The Beloved Country	10	0
Oct	Cat's Eye	16	0
	Dracula	32	10
Nov	Thursday's Child	32	53
	Boy	22	29
Dec	Harry Potter and the Chamber of Secrets	127	551
	The Subtle Knife	105	447
Jan 2006	The Da Vinci Code	48	386
	A Short History of Nearly Everything	31	250
Feb	Lucas	25	224
	Martyn Pig	22	197
Total		1052	2162

Table 12: Reading Group forum (March 2005- February 2006)
[1]Number of views and posts as of 19/03/2006

7.4 The Astronomy and Space forum (A&S)

7.4.1 Age and gender

During the time period this sample was taken the Astronomy and Space group had approximately 786 members. As shown in Table 13 on the next page there were 378 males (48 per cent) and 408 (52 per cent) females. Both the mode and the mean age were 15 years. Further breakdown of the age and gender revealed that there were 138 (18 per cent) members between the ages of 12-13 of whom 82 were males and 56 females; 434 (55 per cent) members were between the ages of 14-16 years of whom 194 were males and 240 females; 187 (24 per cent) members were between the ages of 17-18 years of whom 85 were males and 102 females; and 93 (12 per cent)

members were between the ages of 19-20 years of whom 52 were males and 41 females.

	Total Number Of Members	Males	Females	Mean Age (Yr)	Mode (Yr)	Age Group	Males	Females	Total
A&S	786	378 48 %	408 52 %	15	15	12-13 14-16 17-18 19-20	82 10 % 194 25 % 85 11 % 52 7 %	56 7 % 240 30 % 102 13 % 41 5 %	138 18 % 434 55 % 187 24 % 93 12 %

Table 13: Age and gender for Astronomy and Space forum

7.4.2 Selecting the sample threads

Each month a topic related to Astronomy and Space, with some general background information about the topic, was posted by the facilitator, and members were invited to discuss the issue at hand. I chose to look at each monthly topic as once again it appeared to be the most stable feature at the time. In addition, I also explored the 'Welcome' and 'Suggest a topic' threads. Table 14 below shows each month's topic along with the number of posts and views. A total of 537 messages were coded for this forum.

Month	Topic	Number of Posts	Number of Views[1]
Mar 2005	Welcome Suggest a Topic Impacts from space	113 74 58	2 5 4
Apr	How the Sky Works	21	3
May	Image Processing	95	4
Aug	Asteroids	15	3
Sept	Black Hole Hunt	29	1
Oct	Astronomy Computer Sims	23	3
Nov	Space Tourist	2	1
Dec	Hollywood Goes to the Moon	39	4
Jan 2006	What is a Planet?	48	9
Feb	Our Future in Space	20	6
Total		537	45

Table 14: Astronomy and Space forum (March 2005- February 2006)

[1] Number of views and posts as of 19/03/2006

7.5 General Debates forum (GD)

7.5.1 Age and gender

During this time period, the General Debates forum had 2652 members. As shown in Table 15, there were 1213 (46 per cent) males and 1419 (54 per cent) were females. The mean age was 15.5 years and the mode was 15 years. Further breakdown of the age and gender revealed that there were 350 (13 per cent) members between the ages of 12-13 of whom 170 were males and 180 females; 1463 (56 per cent) members were between the ages of 14-16 years of whom 666 were males and 797 females; 717 (27 per cent) members were between the ages of 17-18 yrs of whom there were 328 males and 389 females; and 101 (12 per cent) members were between the ages of 19-20 years of whom there were 48 males and 53 females.

	Total Number Of Members	Males	Females	Mean Age (Yr)	Mode (Yr)	Age Group	Males	Females	Total
GD	2632	121 46 %	1419 54 %	15.5	15	12-13	170 6 %	180 7 %	350 13 %
						14-16	666 25 %	797 31 %	1463 56 %
						17-18	328 12 %	389 15 %	717 27 %
						19-20	48 2 %	53 2 %	101 4 %

Table 15: Age and gender for the General Debates forum

7.5.2 Selecting the sample threads

This forum was chosen because it was *not* an academic study group. It was an area where members could post and discuss almost any topic they wished to. Although messages were moderated there was no facilitator present to keep the discussions alive for a given period of time. The threads shown in Table 16 on the next page were chosen to be discussed by the members themselves. It was an area that was functioning mainly because there was an interest in the topics.

1015 messages were coded out of a total of 3245 (31 per cent). The sample frame was therefore a total of 3000 messages from the four different forums.

Month	Topic	Number of Posts	Number of Views[1]
Mar 2005	Student perspective on English in the 21st century	34	2
Apr	Personalised Learning –The student voice	27	55
	Political Correctness: Going too far?	136	4
	Should the UK adopt the new EU constitution?	88	0
	Family and Friends: Who is more important?	41	1
	Invasion or Privacy	22	0
May	Life on Another Planet?	104	0
	Yob Culture	85	4
June	Global Warming	82	141
	The Amazon Rainforest	46	20
	Avian Flu: The next epidemic	23	11
	NHS: Should it be privatised?	80	2
	MRSA	31	0
	Ecology versus economy?	11	0
July	Armed Police: An ethical dilemma?	39	0
Aug	Private Schools	215	434
	The Monarchy	149	167
	Marriage for same-sex couples	44	1
	The Iraq War	132	591
	What is Evil?	105	346
Sept	Better to have and lose than to never have	37	95
	Religion versus Science	150	325
	Firearms Laws	30	0
	Where did the universe come from?	164	667
Oct	Vegetarianism	133	471
	Rap Music and its Influence on Society	142	301
	Are top up fees a good idea?	17	33
	Charities - which ones to support?	57	274
Nov	Life Sentence for prisoners	69	193
	Fathers for Justice	48	273
Dec			
Jan 2006	The Media's influence on politics	42	291
	Communism	127	905
	Death Penalty?	158	817
	Corporal Punishment in Schools	28	337
	The Veggie Option	61	547
	Is hope a good thing?	42	399
	Math Theory	101	704
	Should we arm the police?	43	246
	Does Feminism have a role to play in the 21st century?	39	394
	Censorship or protection - do children have a right to choose what they read?	37	326
	Smoke and the City	56	378
	How important is a health diet-and who is healthy?	32	281
	Terrorism	72	414
	Do all religions lead to the same god?	33	287
Feb	Peace in the Middle East	33	259
Total		3245 (1015)	10996

Table 16: The General Debates forum (March 2005-February 2006)

[1] Number of views and posts as of 19/03/2006

7.5.3 Summary of age and gender

From the above data it was observed that both the Reading Group and the Ethics and Philosophy forums were predominately female, while Astronomy and Space and the General Debates forums had approximately the same number of each gender. The mean age of all the forums was approximately between 15-16 years. The Ethics and Philosophy group had the highest number of members aged 17-20 (46 per cent), compared to the others [Reading Group (32 per cent); Astronomy and Space (36 per cent); and General Debates (31 per cent)]. The Astronomy and Space forum had the highest number of members aged 12-13 (18 per cent) compared to the others (Reading Group 12 per cent, Ethics and Philosophy 5 per cent, General Debates 13 per cent).

Table 17 compares the gender composition of the sample forums with the overall NAGTY membership and national population of secondary-school population of gifted and talented learners.

Forum	Males	Females
E&P	32 %	68 %
RG	25 %	76%
A&S	52 %	56 %
GD	46 %	54 %
National (January 2006)	47 %	53 %
NAGTY	49 %	51 %

Table 17: Gifted and Talented members (age and gender)

National data for this comparison and all that follow were obtained from the Statistics Bulletin January Census 2006 published by the Office for National Statistics and the Department for Education and Skills (DfES, 2007). The national data pertain to the 2005-2006 school year, collected in January 2006. NAGTY members' analysis was obtained from NAGTY. The comparison reveals that while there is a higher incidence of females in the Reading Group and the Ethics and Philosophy forums the other two are fairly representative of the overall NAGTY and national data.

7.6 Other member characteristics (all forums)

7.6.1 Ethnic origin

The major ethnic groups were categorised under White, Mixed, Black, Asian, Chinese and Others. Appendix J shows how each category was further divided into smaller distinct groups, and a breakdown is provided for each of the forums.

Table 18 shows the top four ethnic groups represented in each sample forum.

All the forums show a higher incidence of White British (RG 74 per cent; E&P 73 per cent; A&S 80 per cent; GD 80 per cent). The Reading Group has a small representation of Asian or Asian British-Indian (3 per cent), Other White Background (2 per cent) and other Asian Background (2 per cent). The Ethics and Philosophy group has a small representation of Asian or Asian British-Indian (4 per cent), Chinese (2 per cent) and Mixed White and Asian (2.1 per cent). The Astronomy and Space group has a small representation of Asian or Asian British-Indian (5 per cent) Chinese (2 per cent) and Asian British Pakistani (1 per cent). The General Debates group has Asian or Asian British-Indian (5 percent) Chinese (2 per cent) and Other White Background (2 per cent). The second largest ethnic group appears to be Asian or Asian British-Indian in all four forums.

Forum Name	Ethnic Origin		
Reading Group (RG)	White British	479	74 %
	Asian or Asian British-Indian	22	3 %
	Other White Background	12	2 %
	Other Asian Background	9	2 %
Ethics & Philosophy (E&P)	White British	319	73 %
	Asian or Asian British-Indian	16	4 %
	Chinese or Other Ethnic Background Chinese	9	2 %
	Mixed-White and Asian	9	2 %
Astronomy & Space (A&S)	White British	625	80 %
	Asian or Asian British-Indian	41	5 %
	Chinese or Other Ethnic Background Chinese	19	2 %
	Asian or Asian British-Pakistani	11	1 %
General Debates (GD)	White British	2099	80 %
	Asian or Asian British-Indian	122	5 %
	Chinese or Other Ethnic Background Chinese	56	2 %
	Other White Background	43	2 %

Table 18: Ethnic group breakdown for the sample forums

Nationally, the higher incidence of White British (83 per cent), and the Asian or Asian British-Indian (2 per cent), Chinese (1 per cent) seems to be fairly congruent to the sample frames. The NAGTY membership portrays a similar picture: White British (84 per cent); Asian or Asian British-Indian (4 per cent), and Chinese (1 per cent). To see the (national) ethnic background breakdown of all the secondary schools population please refer to Appendix I.

7.6.2 Socio-economic profile (gross family income and Acorn classification)

Table 19 on the next page gives a breakdown of the sample forums according to the gross family income. As can be seen from the table, a lot of information (null or unspecified) was missing, so it was difficult to come to any firm conclusions. The question pertaining to this data was only introduced by NAGTY at a later date and hence several members did not have any input. From the data available, the four top groups in each forum were chosen to get a sense of what the main gross family incomes of the sample members might be. For the complete breakdown of gross family income categories please refer to Appendix K.

There appears to be a high incidence of the £40,000 and above family bracket (RG 13 per cent, E&P 18 per cent, A&S 28 per cent, GD 26 per cent) and the £30,000-£ 40,000 income bracket (RG 4 per cent, E&P 5 per cent, A&S 11 per cent, GD 9 per cent) in all the four groups. This is representative of the whole NAGTY membership and national data which reflect similar results.

Forum Name	Gross Family Income	Percent
Ethics & Philosophy (E&P)		
£40,000 and above	77	18 %
£30,000 - £ 40,000	22	5 %
£25,000 - £ 30,000	19	19 %
£20,000 - £25,000	11	3 %
Null or unspecified	24	24 %
Reading Group (RG)		
£40,000 and above	83	13 %
£20,000 or below	32	5 %
£30,000 - £40,000	28	4 %
Null or unspecified	480	74 %
Astronomy & Space (A&S)		
£40,000 and above	218	28 %
£30,000 - £40,000	86	11 %
£20,000 or below	64	8 %
Null or unspecified	276	24 %
General Debates (GD)		
£40,000 and above	670	26 %
£30,000 - £ 40,000	226	9 %
£20,000 or below	229	9 %
Null or unspecified	1272	48 %

Table 19: Gross family income breakdown for the sample forums

The Acorn (A Classification of Residential Neighbourhoods) classification system, based on the analysis of postcodes is a geo-demographic tool which has been developed by CACI a marketing-data firm (http://www.caci.co.uk/acorn/). The classification system is based on approximately 2 million UK postcodes which have been depicted using 125 demographic statistics and 287 lifestyle variables generated from the 2001 Census and various market-research and lifestyle databases which are updated annually. A postcode may be shared between 14 or 15 addresses which means that these data are comprehensive and not at an individual level and thus may not represent individual characteristics. The information used includes data on demographic variables such as age, gender, ethnicity, income, education level, occupation, home ownership and type, car ownership, housing density, etc. and lifestyle variables such as interest in current affairs, satellite TV, newspapers read, holiday preferences, hobbies and shopping habits.

According to Campbell *et al.* (2005), this type of postcode analyses, which is based on the wide range of data can provide a good idea of the socio-economic profile of the population. In their study, the authors used data based on 2004 ACORN classifications (a total of 56 types, 17 groups and 5 broader categories) to investigate the social origins of NAGTY student members. These analyses, which were based on comparisons of the postcode category distribution among students identified as gifted and talented with the national distributions per category and profile, provided a key comparison for my own research sample which was based on a similar pattern of analyses and population (NAGTY student members).

Appendix L gives an indication of the five main categories - Wealthy Achievers, Urban Prosperity, Comfortably Off, Moderate Means and Hard Pressed - and how each of these categories are further divided into groups and then each group shows the postcodes associated with them. It was beyond the scope of this study to go into the detailed analyses of the 17 groups and the 56 types of postcodes.

Appendix M shows the number of members in the four forums in each of the five broader categories. It also shows the findings of the Campbell *et al.* (2005) in the column marked 'NAGTY'. The 'Wealthy Achievers' and the 'Urban Prosperity' categories together represent approximately 51-57 per cent of the forum membership. The 'Comfortably Off' category represents a further 26-29 per cent. The remaining 12-15 per cent come from the 'Moderate Means' and the 'Hard Pressed' categories. Comparing the results with that of the Campbell *et al.* study. it was noted that there was a slight increase in the Wealthy Achievers category in all four forums (RG 2.2 per cent; E&P 2.5 per cent; A&S 3.2 per cent, GD 2.9 per cent) and two of the forums in the Urban Prosperity category (RG 0.8 per cent, E&P 2.8 per cent). For all the remaining categories there was a small decrease: Comfortably Off (RG 4.3 per cent.

E&P 2.3 per cent, A&S 1.6 per cent, GD 3.3 per cent), Moderate Means (RG 3.3 per cent, E&P 3.4 per cent, A&S 1.4 per cent GD 1.4 per cent), Hard Pressed (RG 1.8 per cent, E&P 0.9 per cent, A&S 2.3 per cent, GD 1.0 per cent). This seems to indicate that there were proportionately slightly more members from the two affluent groups participating in the sample forums than the NAGTY membership shown in the Campbell *et al.* (2005) study.

7.6.3 School type

Table 20 on the next page shows the top six types of schools that the members of the sample forums attended. In all four forums an average of 43 per cent of the members come from Secondary-Community schools (RG 41 per cent, E&P 37 per cent, A&S 49 per cent; GD 45 per cent). Approximately 14 per cent come from Secondary-Voluntary aided (RG 18 per cent; E&P 21 per cent; A&S 15 per cent; GD 18 per cent). Approximately 14 per cent come from Secondary-Foundation (RG 13 per cent; E&P 13 per cent; A&S 15 per cent; GD 16 per cent). Approximately 12 per cent come from Other Independent (RG 11 per cent; E&P 14 per cent; A&S 11 per cent; GD 10 per cent) ; Approximately 4 per cent come from Secondary-Voluntary controlled (RG 4 per cent; E&P 5 per cent; A&S 3 per cent; GD 4 per cent) and approximately 2 per cent (RG 2 per cent; E&P 2 per cent; A&S 2 per cent; GD 2 per cent) come from 16 Plus-Further Education. The remaining 11 per cent come from other types of schools.

Forum Name	School Type	Total number	Percent
Reading Group (RG)	Secondary-Community	269	41
	Secondary-Voluntary aided	118	18
	Secondary-Foundation	85	13
	Secondary-Voluntary controlled	27	4
	Other Independent	70	11
	16-Plus-Further Education	10	2
Ethics & Philosophy (E&P)	Secondary-Community	155	37
	Secondary-Voluntary-aided	90	21
	Secondary-Foundation	53	13
	Secondary-Voluntary controlled	20	5
	Other Independent	61	14
	16-Plus- Further Education	10	2
Astronomy & Space (A&S) (Science)	Secondary-Community	381	49
	Secondary-Voluntary aided	121	15
	Secondary-Foundation	115	15
	Secondary-Voluntary controlled	25	3
	Other Independent	83	11
	16-Plus- Further Education	16	2
Debates (D)	Secondary-Community	1179	45
	Secondary-Voluntary aided	464	18
	Secondary-Foundation	411	16
	Secondary-Voluntary controlled	117	4
	Other Independent	266	10
	16 Plus- Further Education	68	3

Table 20: Top six types of schools that the sample members attend

The E&P forum appear to have a higher incidence (14 per cent) of members who attend Other Independent schools compared to the other forums which all have approximately 10 per cent. In comparison to the national picture and NAGTY membership (Table 21 below shows data taken from Campbell *et al.* 2005), the school types of the sample differs slightly. This is, however to be expected as the membership is dynamic and is dependent on when the data were taken.

Type of School	Sample		National Picture	NAGTY Membership
Community	E & P	37 %	54.9 %	49.3 %
	R & G	41 %		
	A & S	49 %		
	GD	45 %		
Voluntary Aided/ Controlled	E & P	26 %	15.0%	21.6 %
	R & G	22 %		
	A & S	18 %		
	GD	22 %		
Foundation	E & P	13 %	14.3 %	18.0%
	R & G	13 %		
	A & S	13 %		
	GD	16%		
Independent	E & P	14 %	14.6 %	7.9 %
	R & G	11 %		
	A & S	11 %		
	GD	10 %		

Table 21: Comparison of sample with the NAGTY membership and the national data

7.6.4 Summary of the member characteristics

The members of all the sample forums were mainly White British from the Acorn categories of Wealthy Achievers, Urban Prosperity and Comfortably Off with average incomes between £30,000 and £40,000. The types of schools most attended were Secondary Community or Secondary-Voluntary aided. Further analysis revealed that members were admitted to NAGTY mainly on the basis of their CATS and MIDYIS scores (Appendix N) even though both test and non-test scores were accepted. As a lot of LEA (Local Education Authorities) data was missing it was not included here (Appendices O and P).

There was a very small number of members who had withdrawn from the forums and others who had kept on their memberships (Alumni, post-18 members) in all the sample forums (E&P 11, RG 6, A&S 2, GD 32). Permission for research was granted by almost 99 per cent (RG 99.7 per cent, E&P 99.3 per cent, A&S 98.9 per cent, GD 99 per cent) of the membership. Those members who refused were not included in this research.

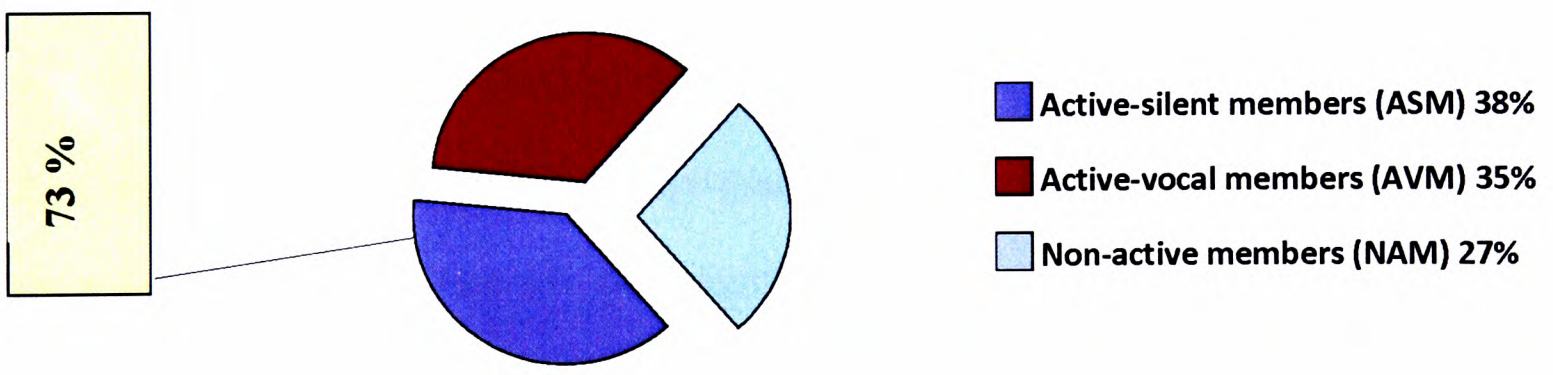
This analysis indicated that in spite of the high aspirations of the English model to be a socially inclusive one the members that participated in these forums tended to be mostly from affluent backgrounds and were mostly White British (see discussion on p.77-87).

7.7 Active participation

A common initial response when considering active participation might be to regard it as being represented by only those members that reply or post messages. It was not until I asked for data that showed me that members were reading (viewing)

the messages that it became clearer that there was more to participation than just 'posting' a message.

Active participants include two types of members: those that read but don't post messages (active-silent members ASM) and those members who read and post messages (active-vocal members AVM). Active members are then both the vocal and the silent members. The assumption that is made here is that when a member logs on to view a certain thread he/she will probably read something. With the software feature that allows one to see how many times a participant logs in and views different threads, and for how long, it has become possible to see how many participants are just reading. The non-active members (NAM) are those who have joined up to become members but have not yet logged in at all to either read or post messages. The above explanation may be expressed diagrammatically in the following manner.



Total membership = Active members [ASM + AVM] + Non-active members [NAM]

Figure 11: Representation of online participation within a community

Figure 11 is a representation of the data in Table 22 below which shows the type of participation in the sample forums. The data shown are for the period of March 2005 to February 2006 and were generated from an analysis of the NAGTY database.

Membership	Reading Group	Ethics & Philosophy	Astronomy & Space	General Debates
Total membership	652	423	786	2632
Active-vocal members (AVM) Reads and posts	303 46.4 %	130 31 %	247 31 %	843 32 %
Active-silent members (ASM) Reads only	217 33.2 %	184 43 %	287 37 %	1060 40 %
Active participation	520 80 %	314 74 %	534 68 %	1903 72 %
Non-active members (NAM)	132 20 %	109 26 %	252 32 %	729 28 %

Table 22: Active and non-active participation of the sample forums

At least three quarters of the community members (73 per cent) seemed to be taking an active part. From the data available, it appeared that the RG forum had approximately 80 per cent of its members participating actively. Of these 46.4 per cent were AVM, and 33.2 per cent were ASM. The E&P forum had approximately 74 per cent of its members participating actively. Of these 31 per cent were AVM, and 43 per cent were ASM. The A&S forum had approximately 68 per cent of its members participating actively. Of these 31 per cent were AVM, and 37 per cent were ASM. The GD forum had approximately 71 per cent of its members participating actively. Of these 32 per cent were AVM, and 40 per cent were ASM.

7.7.1 Active-silent members

Active-silent members have been called 'lurkers' or 'witness learners' elsewhere (Fritsch, 1997 as cited in Beaudoin, 2002). The word 'lurking' has a negative underlying meaning which implies spying, hanging around, listening in on the conversations without the knowledge of the conversationalists, which is frowned upon by society. It has been claimed that in most online communities 90 per cent are

lurkers, 9 per cent of participants contribute a little and 1 per cent contribute to most of the activity (Nielsen, 2006).

Researchers are now beginning to look at lurking more closely and in a more positive way and are still trying to understand its effects. In a recent analysis of an electronic class conference, Sherry (1998) found evidence that even though 'lurkers' tend to listen in rather than contribute actively, there was evidence that they do learn. Similarly, Beaudoin (2002), in his study of inactive students in an online graduate course, discovered that these students spent a significant amount of time in learning-related tasks, including logging on, even when not visibly participating, and they felt that they were learning and benefiting from this low-profile approach to their online studies. Fritsch (1997, as cited in Beaudoin, 2002) contends that learning, even in this more passive and less visible mode, is still occurring. Beaudoin goes on to suggest that since three-quarters of his study group indicated that they preferred reading to writing, this may suggest a learning style preference for them.

Reasons for remaining silent

In the online questionnaire, one of the questions asked the participants for reasons for not posting messages or remaining silent in the forums. Table 23 shows the responses. The findings indicated that 58 per cent of the members felt that they did not feel a need to post, and 30 per cent felt intimidated by the messages already posted and the large audience. This appeared to confirm the notion that while some members seemed content just to 'listen', the reason behind this may be a certain amount of intimidation. If one of the purposes of this online space is to provide a place where gifted members could feel free to participate without any problems then the purpose was not being met. It appeared that the different ability levels of the

gifted learners were becoming a problem as it made some of them feel less self-confident. However, this might also have its advantages: it provided them with a new perspective about their abilities in relation to other gifted learners. It might be that at school they were always at the top and had become complacent in their attitude.

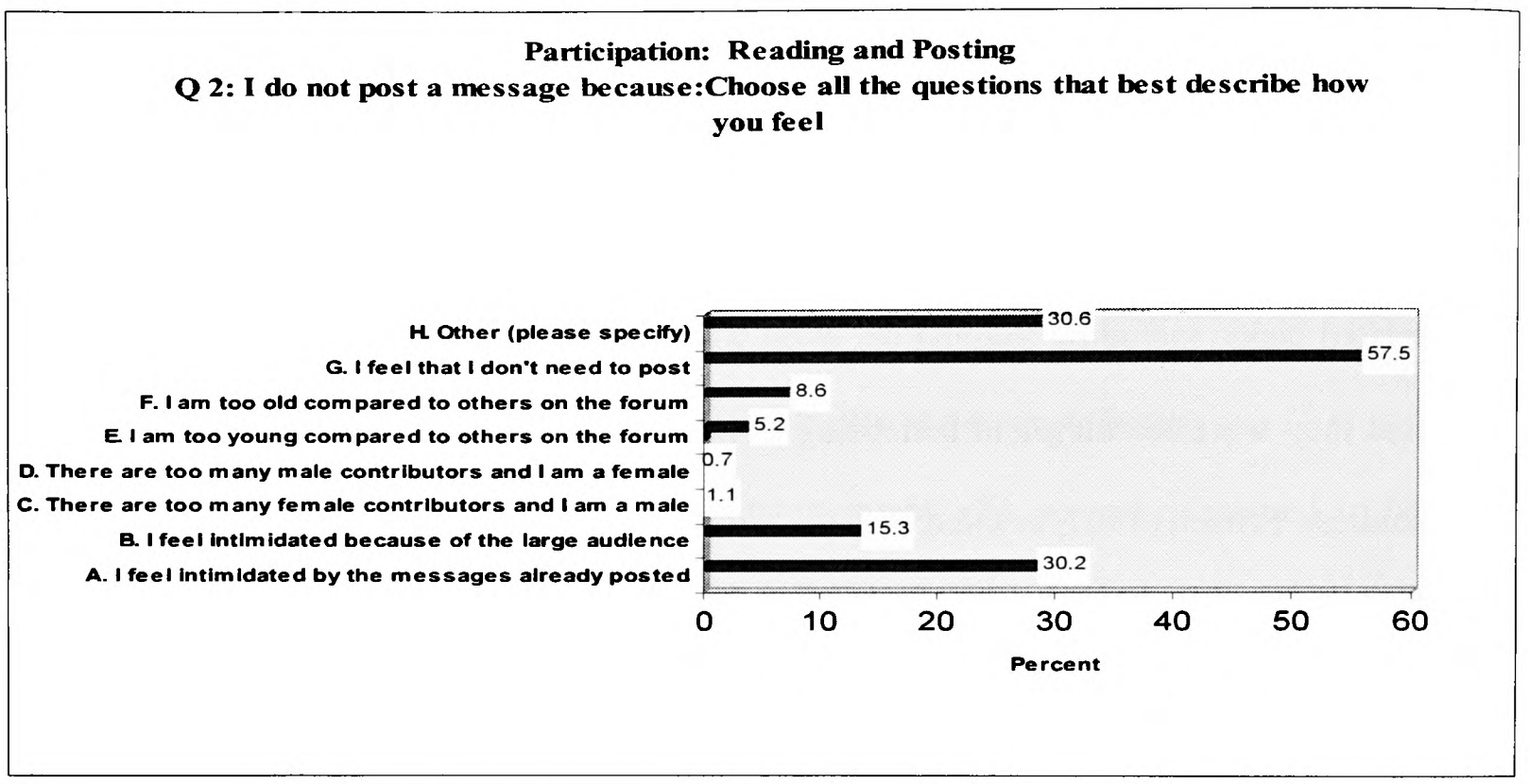


Table 23: Question about participation

From the open-ended comments for this question, some reasons that had already been mentioned were reiterated (lack of knowledge, confidence and generally being satisfied with just reading the messages) and other new reasons for not posting a message came to light:

1) The views that they wanted to express had already been expressed;
2) There was a lack of time to think and write the messages because of other pressures. They always meant to come back and write when they were less pressurised but kept forgetting to come back;
3) There were many technical problems. Asynchroncity, heavy and slow moderation of messages, interface navigation problems and lack of computer skills deterred some members from posting a message;

4) There were reasons for not posting related to power and control issues. It would be naïve to suppose that decisions to participate, share and challenge ideas are power neutral. The presence of power influences seems inevitable in the online spaces as there are some who are more confident, appear to be more knowledgeable and are assertive.

> 'I'm sometimes put off by some topics because they often just turn into an argument between two regular forum contributors arguing against each other directly with long-winded posts.' (Radha, Q)

Although these behaviours seemed to emulate face-to-face discussions, what was not known was whether those who were 'in control' were the same learners who would be in control in face-to face situations or whether they were those who felt empowered now that they were in a virtual community. This might be particularly relevant for those gifted and talented learners who might not be able to show their 'true colours' in a regular classroom because of the social stigma attached to being a nerd, but may suddenly find themselves empowered to show off when their identity was anonymous?. Sherry Turkle in her book, *Life on the Screen: Identity in the Age of Internet* (1996) argues that the nature of the CMC medium allows the users to have a 'flexible self'' which permits the freedom required to not conform to others. The learners may feel more able to be critical and to challenge existing consensuses.

This could be related to their own sense of awareness or self-concept which might have led them to place themselves in a continuum of abilities being exhibited on the forum. As a result they might have chosen to remain hidden, or perhaps even assumed a persona of a more confident individual, as the social space created by this medium allows identities to be created and negotiated (Jones, 1995). This new identity might be their 'true' selves. It may be that when they are in their school

environment they would rather conform to the school culture and choose to be someone else, but in a community where they feel accepted they might revert back to who they would really like to be. Gunawardena (1995), suggests that it is relatively easy to shift identities in an online community. However, even though text-based medium may be described as an equalising medium as they can eliminate social context cues, it was apparent that they can just as easily create boundaries and hierarchies.

> Research on social presence and computer mediated communication has indicated that despite the low social bandwidth of the medium, users of computer networks are able to project their identities whether 'real' or 'pseudo', feel the presence of others online, and create communities with commonly agreed on conventions and norms that bind together to explore issues of common interest.
>
> (Gunawardena, 1995:195)

Power cliques forming in the community where few members may be controlling the flow of the conversation would naturally be quite off putting to newcomers and others who were less confident and had low self-esteem. They then feel as if they were intruding in a conversation between friends. These feelings of exclusion may have lead to feelings of alienation, a lack of connectedness and safety.

> 'I've never really got into the whole NAGTY thing - the vocal people on there have all their little Internet friends, and I'm pretty sure that no-one knows who I am.'
>
> (Britney, Q)
>
> 'I'm not in any of the friendship groups on the forums, and so feel like I'm interrupting a discussion between friends.'
>
> (Jason, Q)
>
> 'Sometimes threads become hi-jacked - i.e. they are no longer discussing the relevant topic but something completely off topic. This at times can be fairly off-putting. Especially if you are new to a forum - you will want to feel that your posts are being read rather than buffeted by an off topic comment.'
>
> (Kay, Q)

These findings echo those of Nonnecke and Preece (2000) who found that silent participation or not wanting to post was related to remaining anonymous and preserving privacy and safety. They reported that lack of participation was a result of a 'lack of connection with others' and that they felt like intruders. This I believe is what may be happening in the case of these gifted learners. Safety seemed to be an essential ingredient when it came to participating in the online discussions as silent reading or silent participation might have been seen as directly related to increasing one's safety net by remaining anonymous, by not challenging any one's views and remaining hidden. In effect some of the gifted learners were choosing to learn in a safer, more secure learning zone. This was a choice the members of this community could opt for as participation wasn't obligatory. However, this may not be possible for all online learning courses and the silent members may have to become vocal in order to get a passing grade.

It would seem that in this community where participation was purely voluntary, and was based on one's own interest, reading instead of posting was a choice that the members were exercising. As Beaudoin (2002) contends, when a member is logging in and reading he or she is engaging in the learning process; he or she is confronted by facts, varying views and the thinking processes of others. In the process of interacting with the information in the posted messages, some learning may be occurring.

According to Kearsley (1995), one of the reasons that members prefer only to read and not post may be because the more autonomous, self-directed learners who tend to be more reflective do not necessarily require the reinforcement from

interacting with more 'other-directed' peers. They may simply be exercising their right to be autonomous constructors of their own knowledge.

7.7.2 Active-vocal members

Table 24 below shows the number of AVM members: those who have contributed by posting and by reading in each forum. A ratio calculating the number of reads to the number of posts showed that the basic ratio for the three academic groups was approximately the same (Reading Group 11:1, Ethics and Philosophy 11:1, Astronomy and Space 10:1 and 8:1 for General Debates). For every 11 reads there was one message posted in Ethics and Philosophy. The General Debates forum, which seemed to be the most popular one because of the large number of posts at first glance, had a lower 'read to post' ratio.

Number of posts and reads	Reading Group	Ethics & Philosophy	Astronomy & Space	General Debates
Posts (P)	2283 8.5 %	646 8.2 %	1050 8.9 %	6191 10.9 %
Reads (R)	24554 91.5 %	7212 91.8 %	10783 91.1 %	50371 89.1 %
Percent ratio R:P	11:1	11:1	10:1	8:1
Total number of posts and reads	26 837	7858	11 833	56 562

Table 24: Messages read and posted by the sample forum members

From the data available, it would appear that there was a lot of active participation in each of the forums, albeit there was more reading than posting.

Two prominent styles of learning seem to be evident here. First, there are those learners who are content to 'listen' through just reading other messages, but still learn in the process. These are the active-silent learners described above: participants who may be choosing to keep their thought processes to themselves as they may be more introverted. As a result they may not respond (post a message) until they become confident enough to do so. In the meantime they may continue to look at different perspectives, challenging views mentally and in doing that there is a likelihood that

some form of learning is taking place. Second, there are those learners who want to 'speak out', are more vocal and say what they are thinking by externalising their thoughts by posting messages. These are the active-vocal members. They may prefer learning through argumentation and use the writing process to help them think things out logically. These learners may be less reticent. However, they may still be reflective, having thought out what they want to say carefully before writing their thoughts down. Posting messages allows each member individuality; they can take their involvement to the level they want to. The usual cues (tone of voice, facial expressions, gestures) that might inhibit a person from arguing or saying anything in a face-to-face discussion are absent in an online environment. This encourages students who would normally not speak to also contribute. It may also allow and encourage those gifted learners who are unable to show all their enthusiasm in their school environment because of the stigma associated with being a 'nerd' to be able to say what they want to.

In order to understand this phenomenon better, questions addressing why the community members chose to post/not post a message, if they read any messages when they logged in, and what happened when they read the messages were asked on the questionnaire. The following sections report the findings to these questions.

Reasons for posting/not posting

Table 25 shows the results of the options given to the respondents in response to the question about what happened when they posted a message. Of the members who responded, 65 per cent said that they enjoyed getting messages that challenged their opinions. Although 38 per cent agreed that they felt discouraged when no one replied, 30 per cent said they didn't care as long as they got their opinion across. Of the participants, 41 per cent believed that the process of posting helped them to learn

how to think and write lucidly and 51 per cent believed that as they wrote they found themselves thinking more clearly than when they spoke. Of the members that responded, 40 per cent felt that the online environment helped them to think more clearly and helped them to state their opinions (50 per cent) compared to when they were in face-to-face discussions.

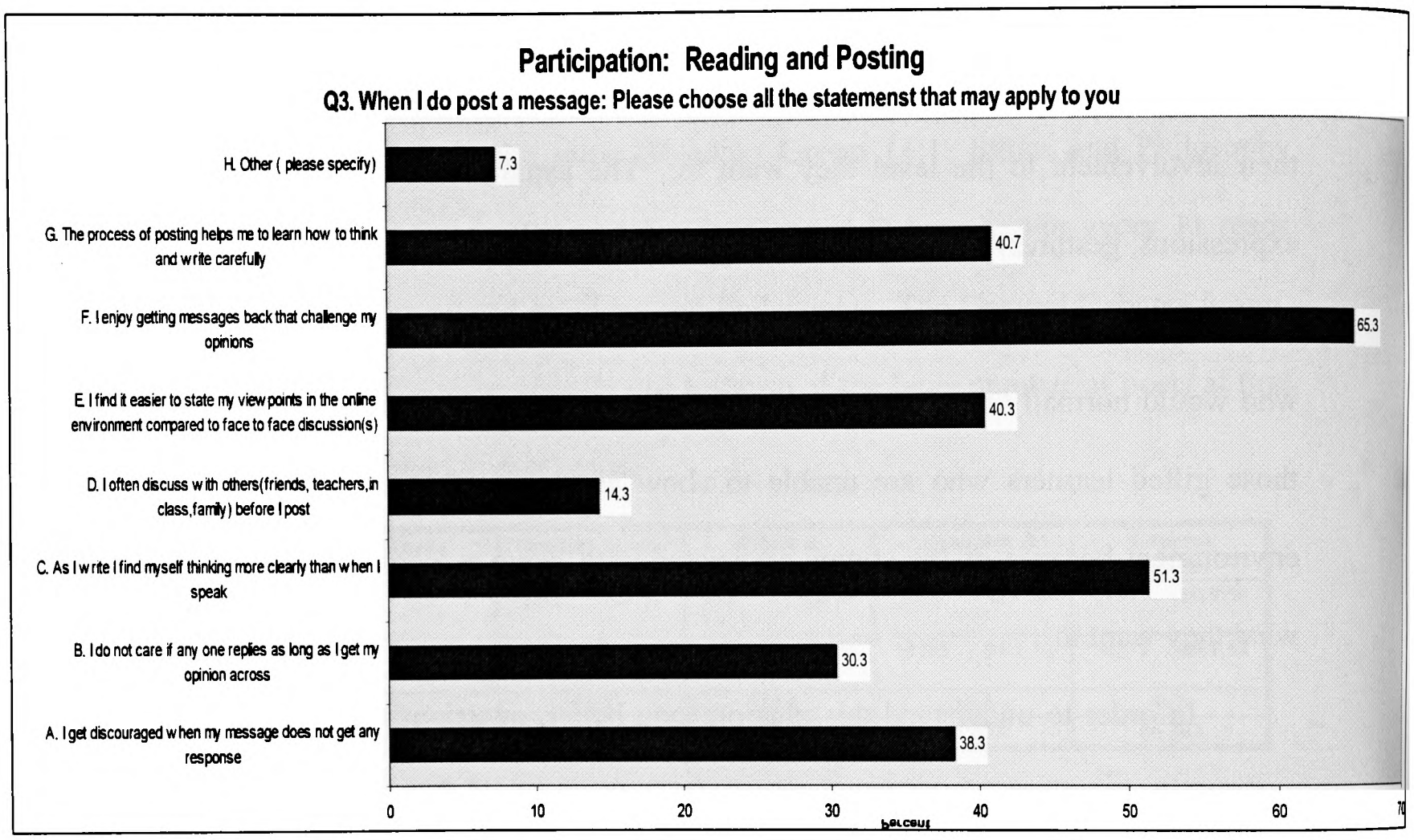


Table 25: Question about posting messages

The open-ended remarks (all from different members) revealed some more reasons for wanting to post a message and also confirmed the ones already given:

1) Posting was seen as a confidence builder in face-to-face situations.

> 'Posting has helped me learn to think about issues more completely and has given me more confidence with regard to face-to-face debating.'
>
> (Lydia, E&P)

2) Getting a response was seen as being encouraging.

> 'It is good to get messages that agree with/add to my opinion or complement …'
>
> (Felicity, RG)

3. Posting was seen as a source that brings a feeling of happiness.
'Being part of the discussion forums and posting regularly means I feel happier as I have got friends in the online community.' (Jake, A&S)

4. Posting was seen as an aid for reflective inquiry.

'Writing a post helps me define and examine my own views on the topic.'

(Dawn, E&P)

'Helps to organise your ideas so speaking is easy.' (Manny, RG)

Reading messages

Table 26 shows the results to the options that were given to the respondents about what happened when they read other posts. Of the members that responded 75 per cent said that they loved reading well thought-out messages, 57 per cent felt that they learnt a lot from just reading the posts and 46 per cent of the members agreed that their style of thinking things out had improved just by reading other messages.

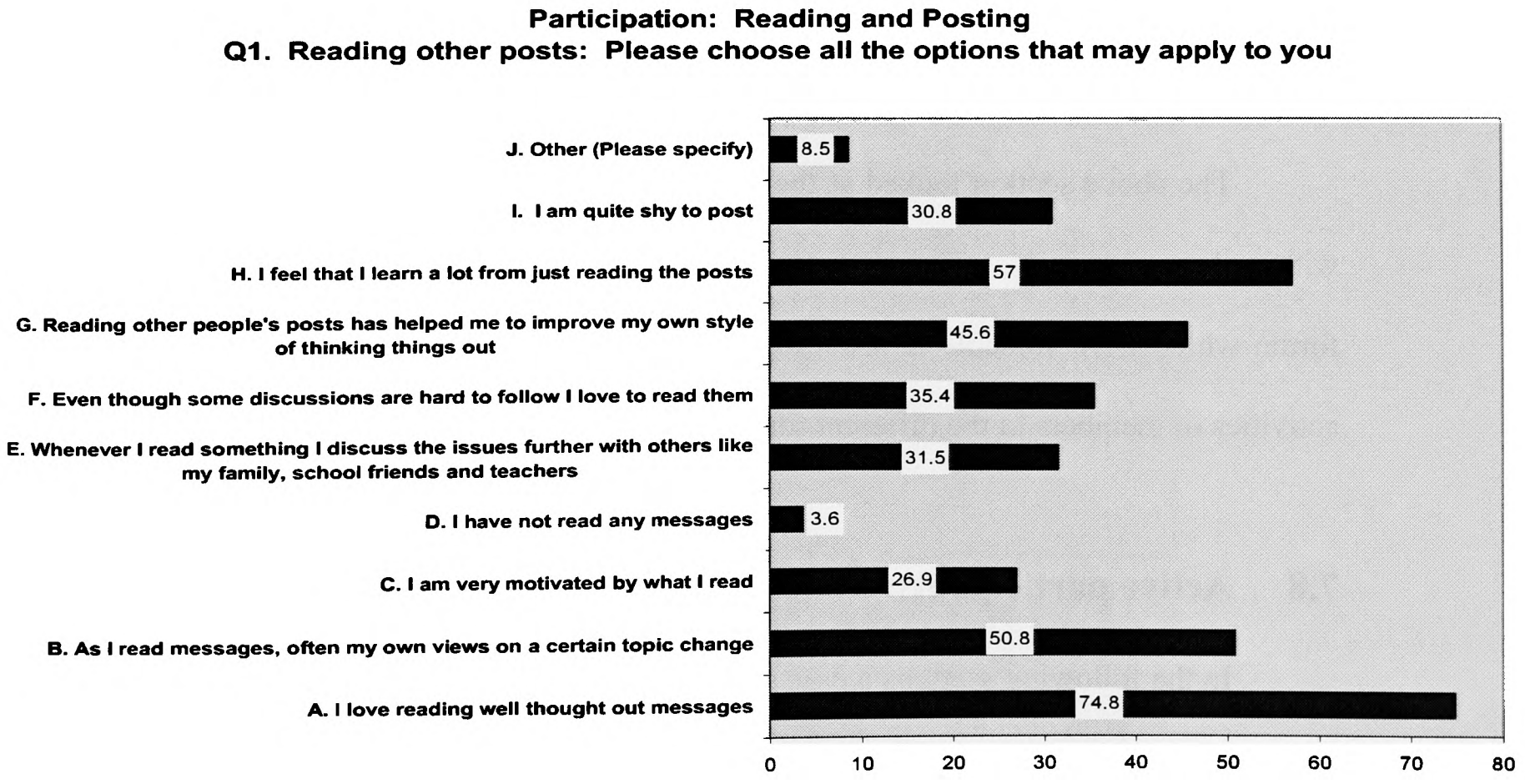


Table 26: Question about reading messages

Of the members who responded, 32 per cent were too shy to post, 37 per cent loved to follow discussions even though they were difficult to follow and 27 per cent of the members felt motivated by what they read. Only 4 per cent of the respondents said that they had not read any messages. This was reiterated in some of the open-ended comments which showed that the members enjoyed sharing the views and the challenge that they provided. Of the respondents, 36 per cent indicated that they discussed issues they read about on the forums with other people (family, friends, teachers). This seemed to suggest that what was learnt from the forums was applied to other situations.

From the open-ended comments, the feeling of getting inspiration from others was reinforced by comments such as:

> 'It's good to find out what ideas other people could have on different topics that I myself didn't think were possible to have.' (Hannah, Q)
>
> 'I enjoy seeing the different points of view and learning from other members.' (Phil, Q)

The above section looked at the two types of active participation taking place within the community. The next section presents some case studies within each forum which were valuable in shedding more light on the multifarious participatory activities of members in the different forums.

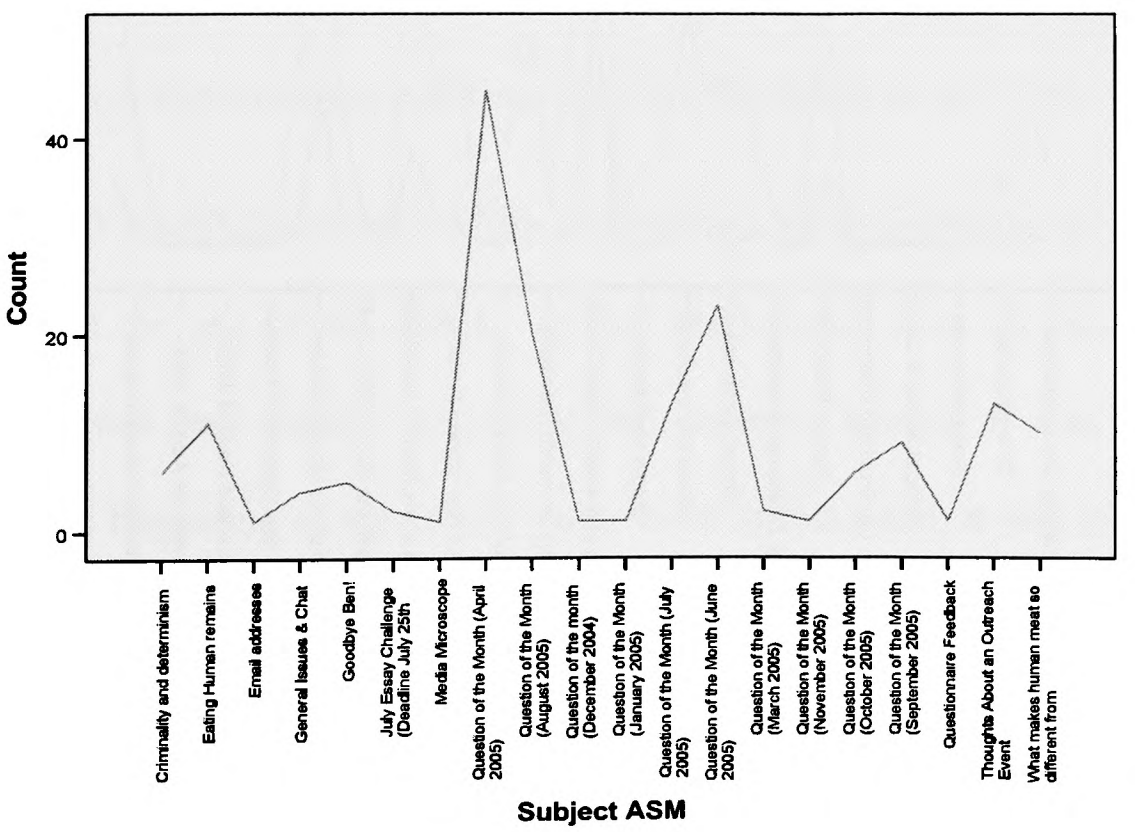
7.8 Active participants: some case studies

In the following sections a case study of the patterns of participation of the top most active-silent member and the top most active-vocal member within each forum are presented. The activity of each member examined was not limited to the threads that were used for the sampling frame, but to get a complete picture of the overall

participation it was spread across all available options within each forum. The reason I chose to look at the extreme ends of the two different types of participation was because I felt that they would be most representative of what was possible in this community of inquiry. I did, however, look closely at a few different members of the middle groups but they seemed to be telling the same basic story of participation.

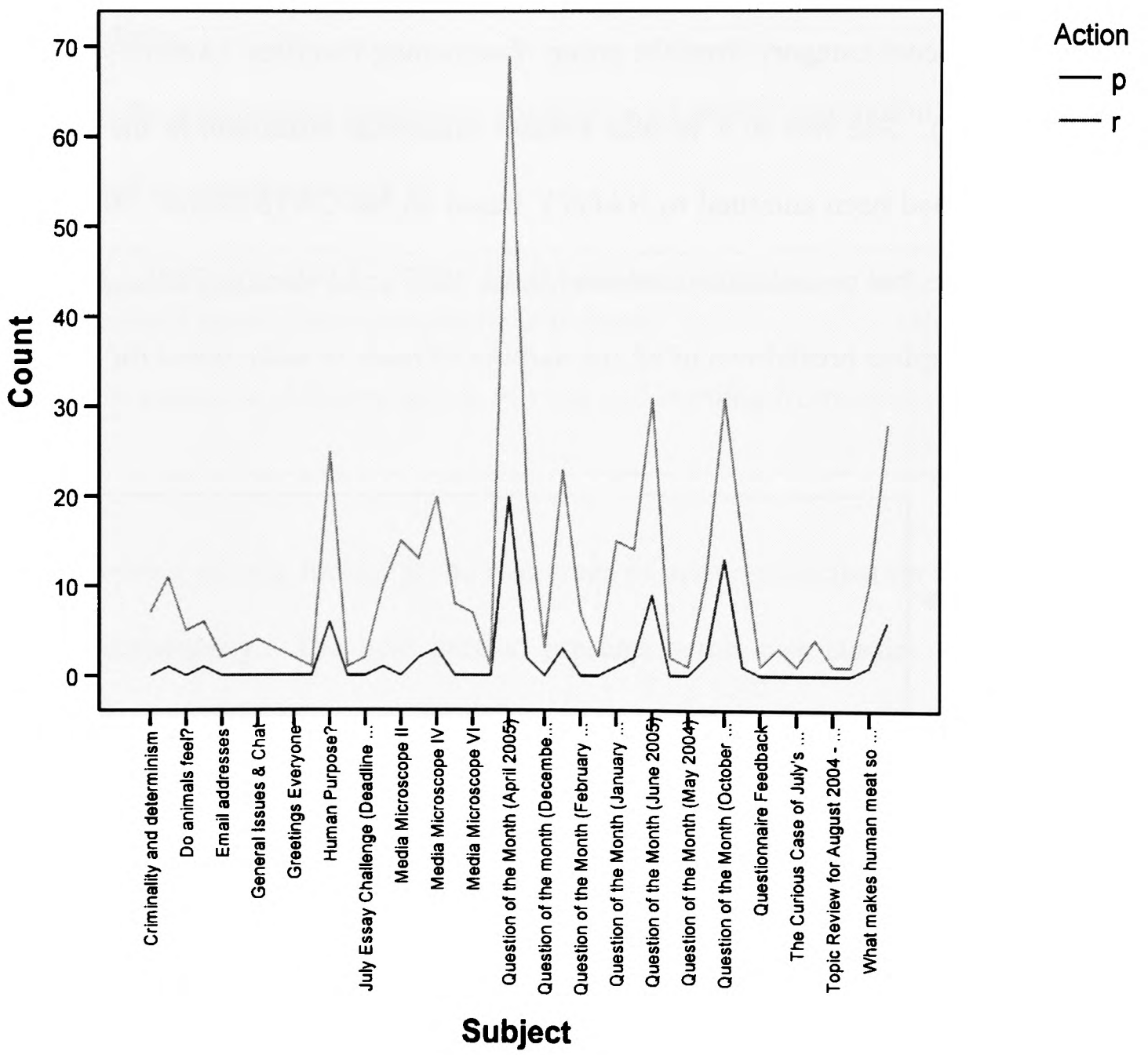
7.8.1 Ethics and Philosophy

Elaine was one of the silent members of this group. She was 18 years old and had been a member of NAGTY since 2003. She was White-British from the Wealthy Achievers Acorn category from the group 'Flourishing Families' (Acorn type 10 – see Appendix L). She was in a 16-plus Further Education institution in the Lancashire LEA. She had been admitted to NAGTY based on her CATS scores. She had read 175 messages but posted none between March 2005 and February 2006. Appendix R shows a complete breakdown of all the number of reads in each thread for all the case studies.



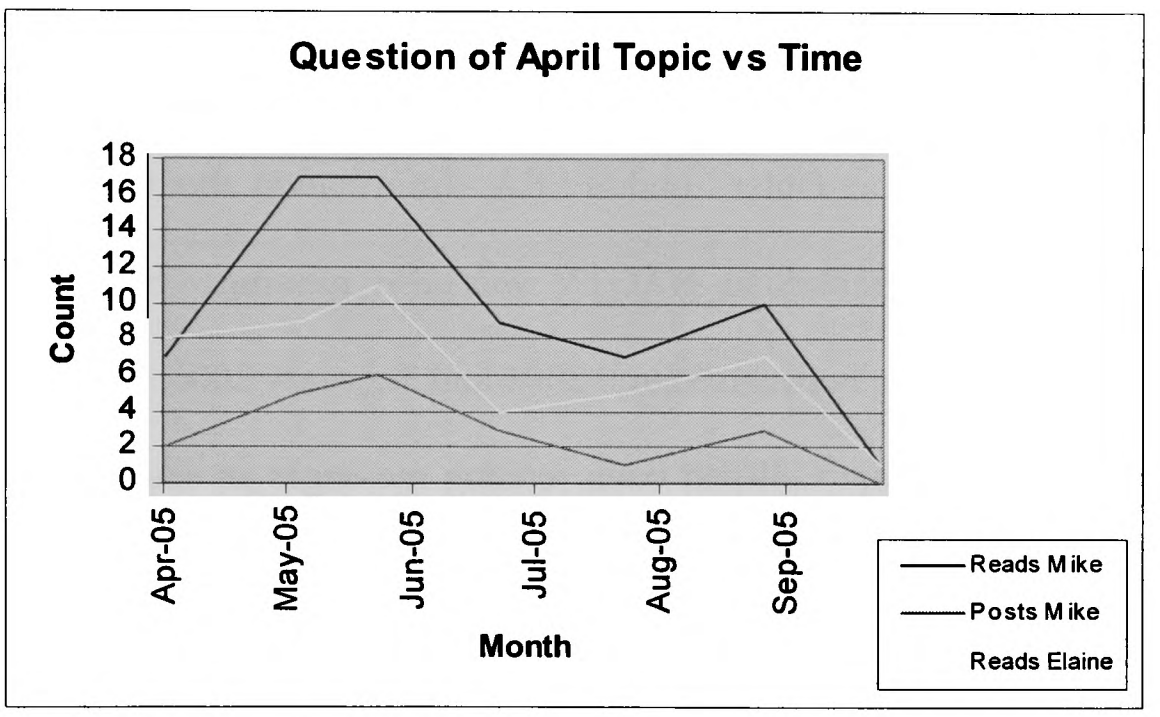
Graph 1: Most active-silent member in the Ethics and Philosophy forum (Elaine)

Mike was one of the most vocal members of the Ethics and Philosophy forum. He was 17 years old and had been a member of NAGTY since 2004. He came from a White-British family from the Wealthy Achievers Acorn category from the 'Wealthy Executives' group (Acorn type 4 – see Appendix L). He was also in a 16-plus Further Education institution in the Shropshire LEA and had been admitted to NAGTY based on his GCSE scores. Mike had read 439 messages and posted 74 between March 2005 and February 2006.



Graph 2: Most active-vocal member in the Ethics and Philosophy forum (Mike)

Graph 2 shows Mike's overall pattern of participation which reflected that he was actively involved in almost all of the threads. Once again the April topic generated the most engagement. The question for the month of April was 'Is science true because people believe in it, or do people believe in science because it is true?' At first glance it appeared that Mike was most active in the month of April. However, further analysis revealed that it was the subject and not the month that had to be explored to understand the different participation patterns.



Graph 3: Participation in April topic by Mike (AVM) and Elaine (ASM)

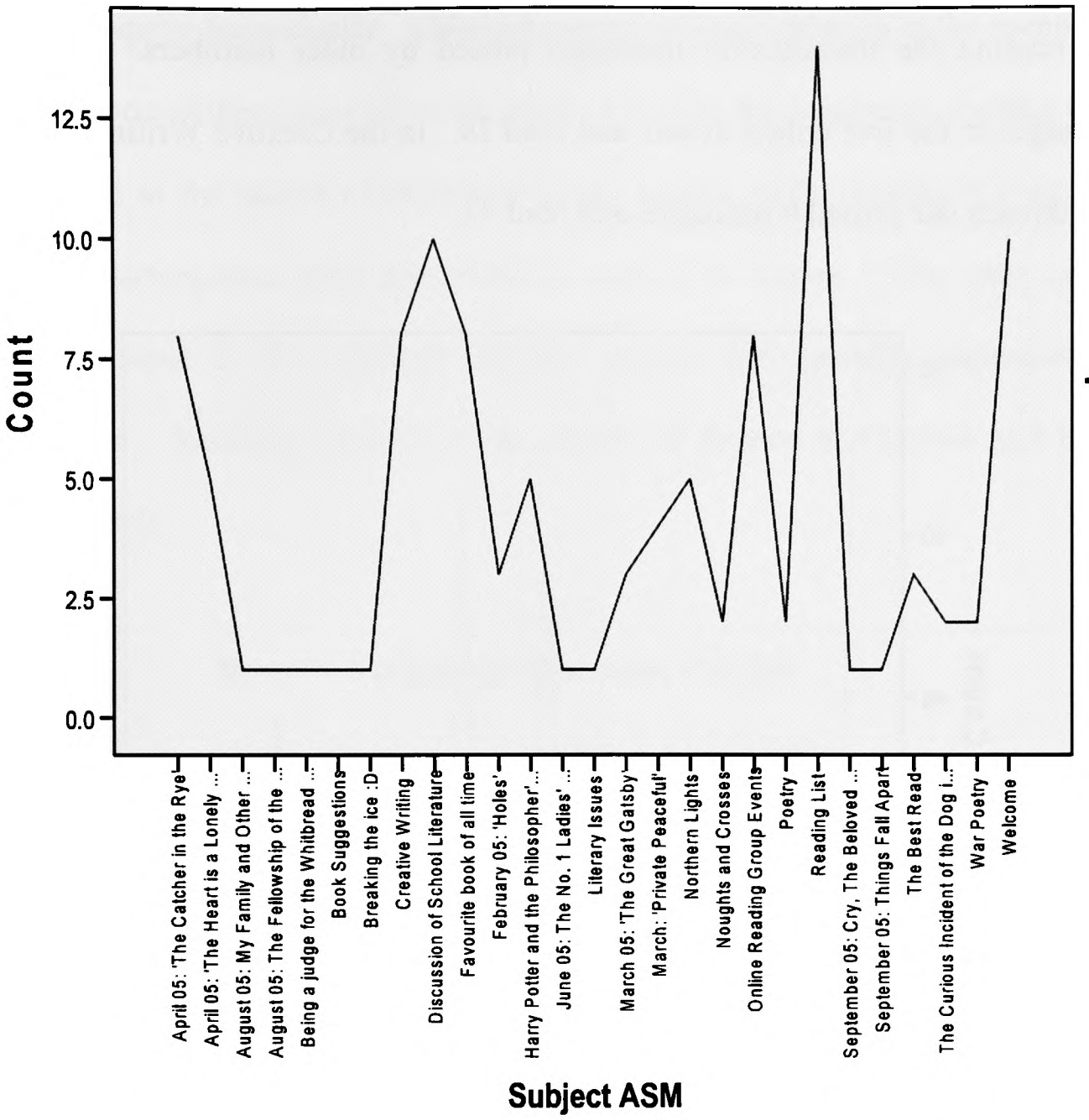
Graph 3 revealed that both Mike and Elaine's participation in the April topic did not stop at the end of the month. In fact it continued over six months. Even though there was less interest shown in the summer months it was revived in September, the beginning of the school year. Even at this point, it was the facilitator who redirected everyone still involved in this topic to move on to a newer thread which had been started. Not all topics generated the same interest; some of them continued for a couple of months and usually terminated when the facilitator summarised the posts. It might have been that as the number of threads increased, so the time the facilitator had to spend on all threads would have increased too and as a

result the debates had to be archived. Having too many threads running simultaneously would also make it harder for the newcomers to navigate round the board.

7.8.2 Reading Group

Gill was one of the silent members of this group. She was 17 years old and had been a member of NAGTY since 2003. Her ethnic origin information was not available but she came from a Comfortably Off Acorn category from the 'Secure Families' group (Acorn type 28 – see Appendix L). She was in a Secondary Community school from an Outer London LEA. Information about the criteria under which she had been admitted to NAGTY was also missing. She had read 111 messages but posted none between March 2005 and February 2006.

Graph 4 shows that Gill had been reading messages in several threads. She appeared to have been interested particularly in the Poetry, Reading List, Creative Writing, Discussion of School Literature and Favourite Book of all Time threads. Although she herself did not post her preferences, Gill might have been using these threads to become aware of all the books she could read. She did not seem to be very interested in all the 'book of the month' threads but visited the book discussions she liked ('*The Great Gatsby*' and '*Private Peaceful*'). She participated in the live online events and seemed to be interested in writing, and perhaps visited the threads to get some motivation.

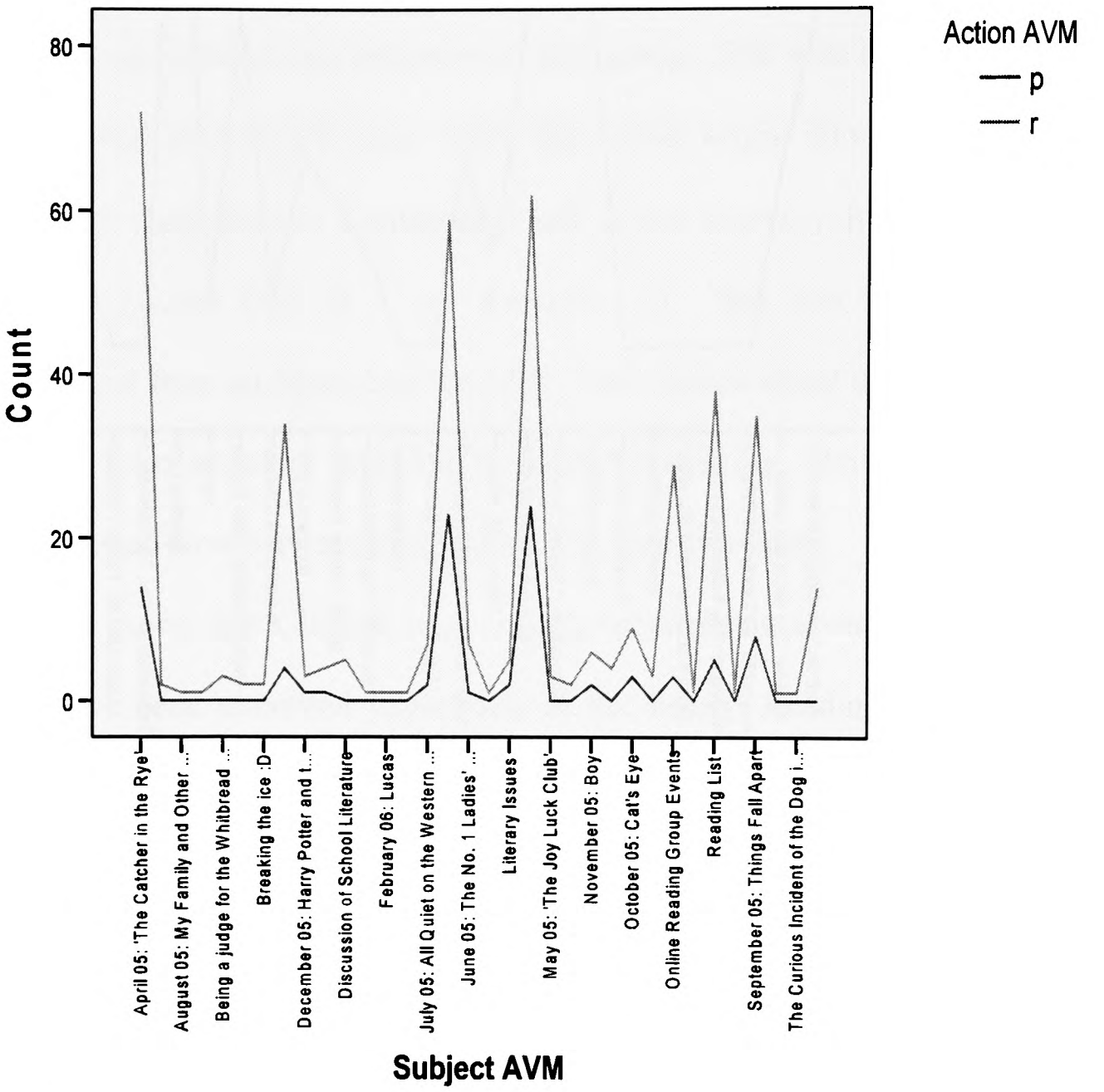


Graph 4: Most active-silent member in the Reading Group forum (Gill)

Joan was one of the most vocal members of this group. She was 18 years old and had been a member of NAGTY since 2003. She came from a White-British, Wealthy Achievers Acorn category from the 'Wealthy Executives' group (Acorn type 1 – see Appendix L) background in which She was presently in an Independent school in the south-east of England. She had been admitted to NAGTY based on her GCSE scores. She had read 420 messages and posted 93 messages between March 2005 and February 2006.

Graph 5 shows Joan's participatory activity. Her highest activity period was in the spring/summer months (April-June) in which she posted 61 messages and read

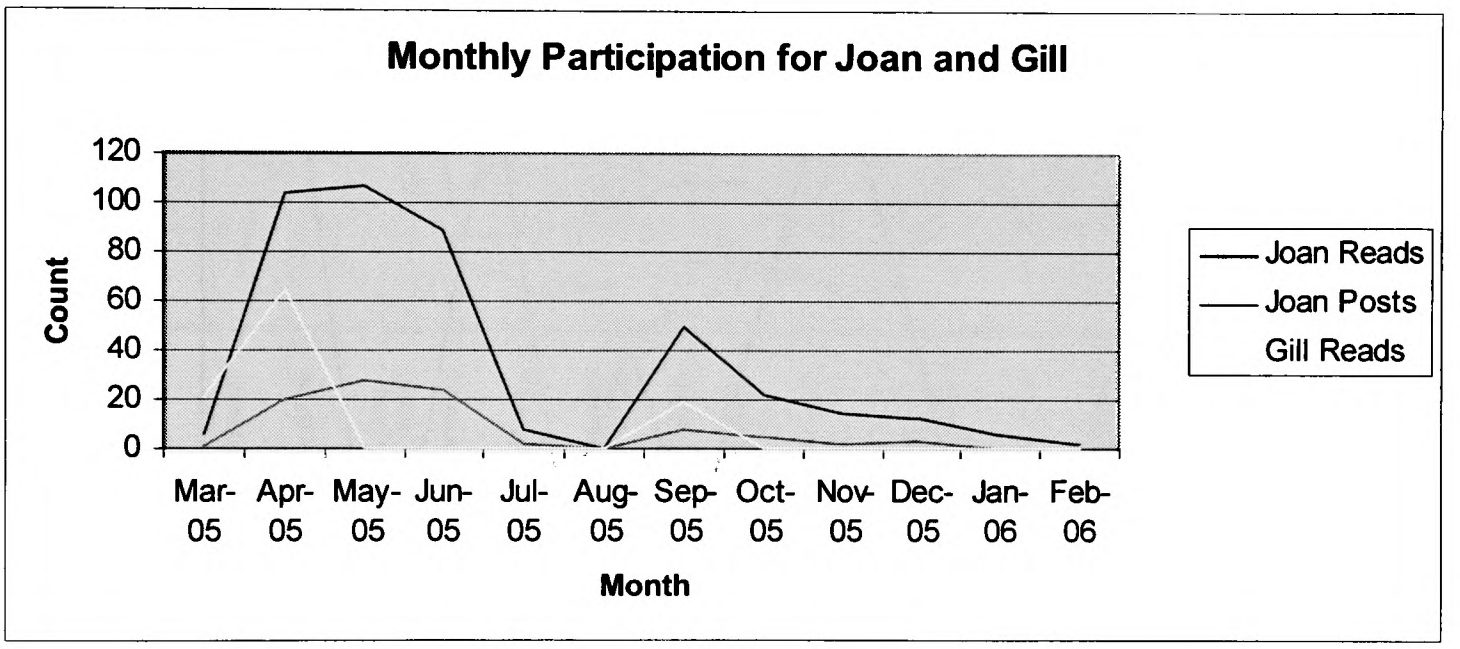
193. She participated in the 'Breaking the Ice' thread by posting her own introduction and reading the introductory messages posted by other members. She posted 3 messages in the live online events and read 29. In the Creative Writing and Reading List threads she posted 9 messages and read 72.



Graph 5: Most active-vocal member in the Reading Group forum (Joan)

The Reading Group differed from the Ethics and Philosophy forum in that the discussions about the book of the month ended at the end of each month. It was therefore not useful to analyse any one topic to see how long the member participated in it. Instead, an analysis of participation in each month (Graph 6) showed more clearly the months of maximum activity (March 05–Beginning of July). For Joan, in the latter part of the month of July and August there was no activity as this possibly

because this was vacation time. Activity began again when the school year started but then tapered off quite dramatically. Although some reading continued in the month of January and February there were no more posts. For Gill, the maximum reading was from the middle of the month of March 05 to the middle of the month of May 05. There was no participation from then until the middle of August. This once again might be attributed to the summer holiday period and possibly examination preparation time. Reading resumed in the month of August to October and then stopped completely.

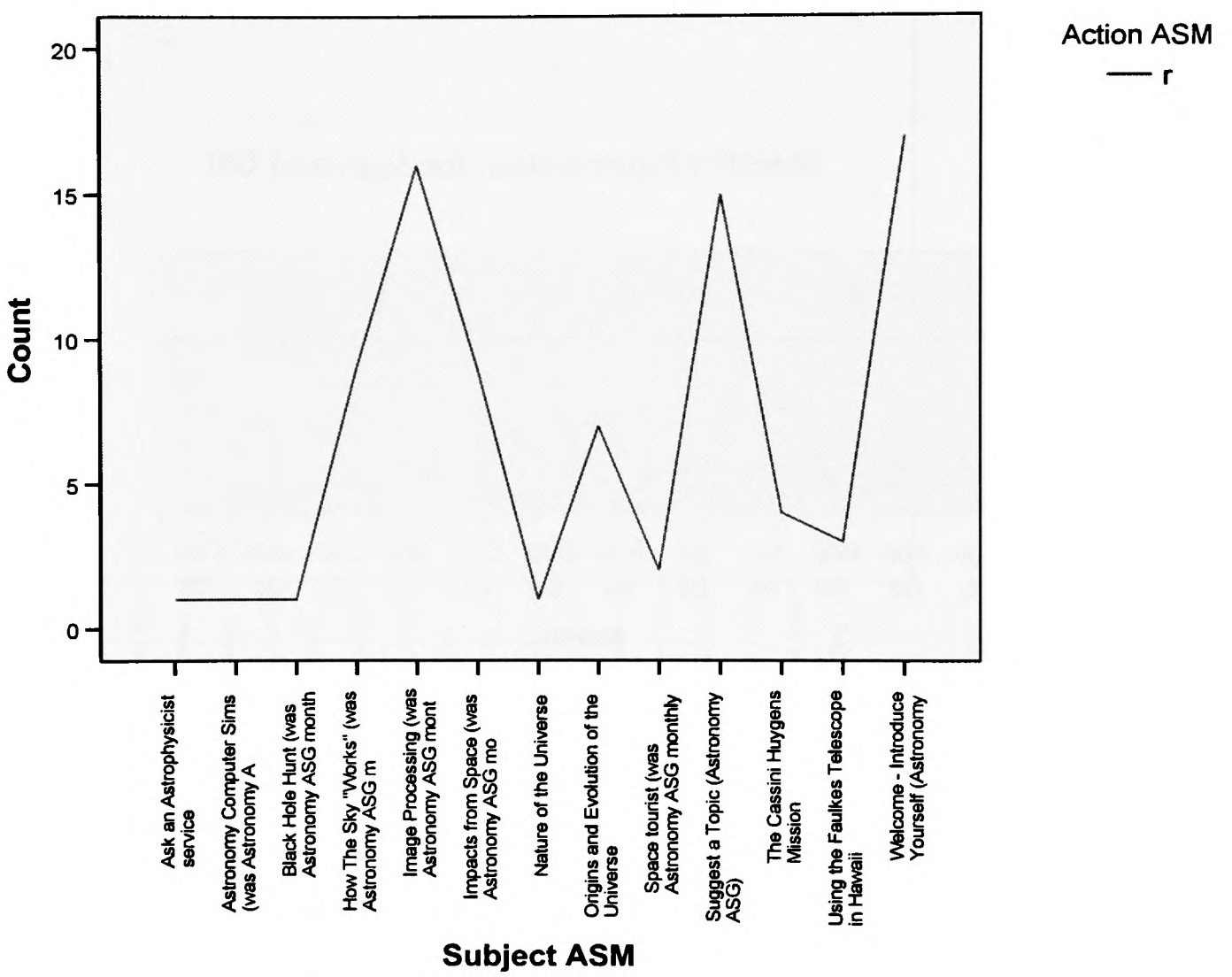


Graph 6: Monthly participation by Joan (AVM) and Gill (ASM)

7.8.3 Astronomy and Space

Bob was one of the silent members of the Astronomy and Space forum. He was 19 years old and had been a member of NAGTY since 2003. He came from a White-British family from the Wealthy Achievers Acorn category from the 'Wealthy Executives' group (Acorn type 4 – see Appendix L). He was also presently in a Secondary Foundation school in the Poole LEA. Information about the criteria under which he was admitted to NAGTY was unavailable. Bob had read 86 messages and posted none between March 2005 and February 2006.

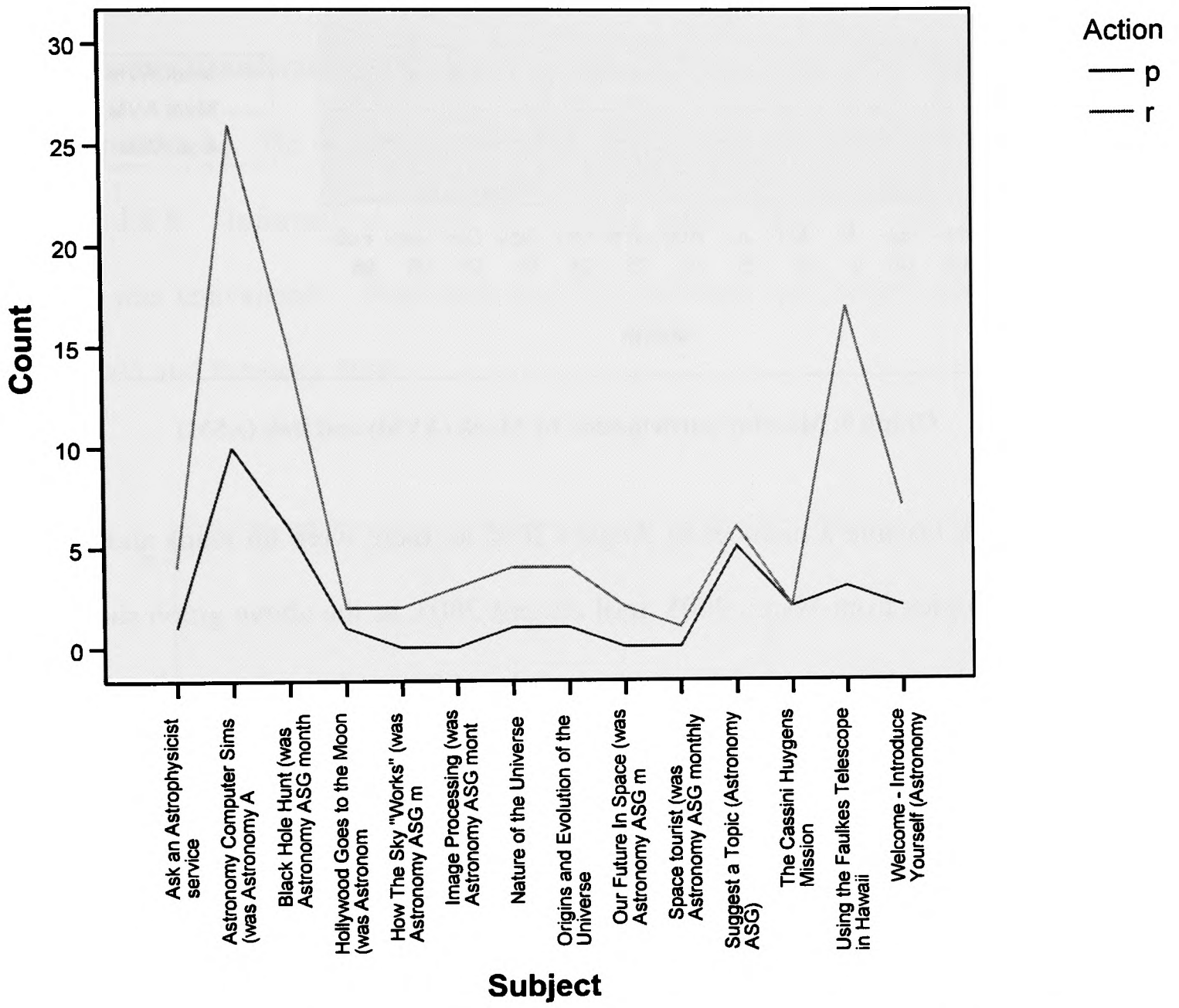
Graph 7 shows Bob's participation in each topic. Bob appeared to have been most engaged in the group especially in 'How the Sky Works' (9 messages), 'Image Processing' (16 messages), 'Impacts from Space' (9 messages). He seemed to be more interested in knowing about the community members than the topics as he read the 'Suggest a Topic' (15 messages) and 'Welcome, Introduce Yourself' (17 messages) the most. All the remaining topics had at least one read.



Graph 7: Most active-silent member in the Astronomy and Space forum (Bob)

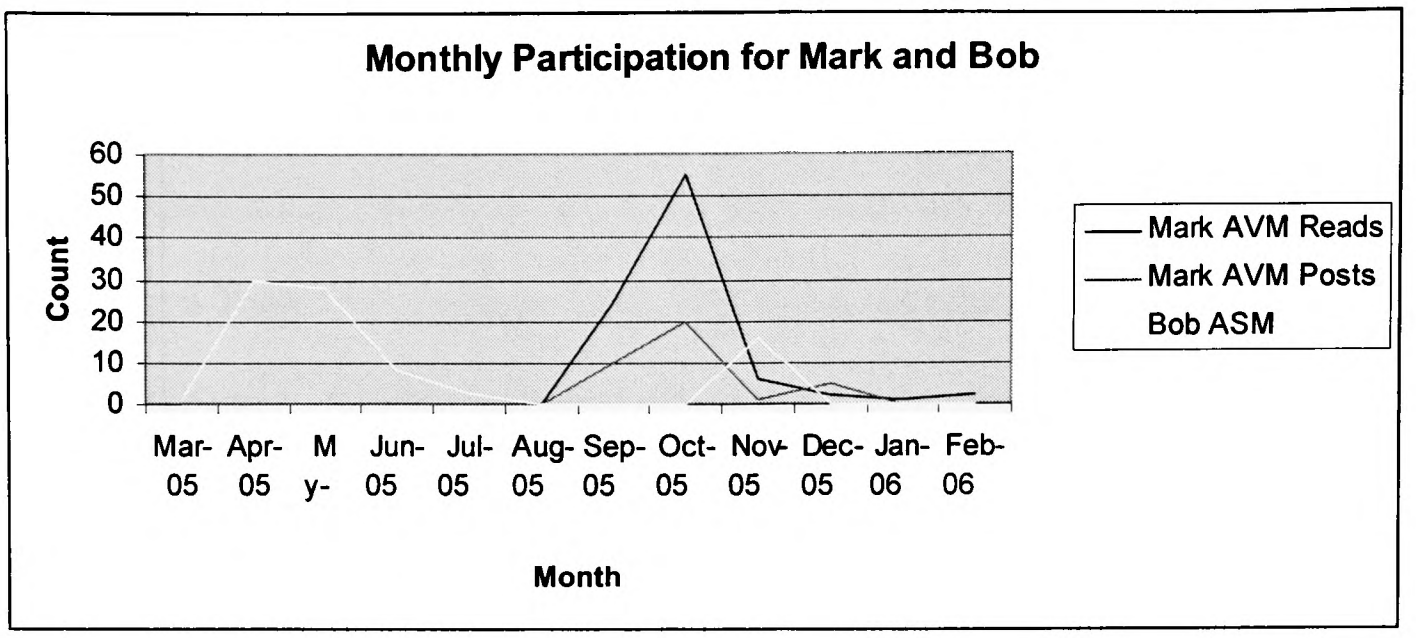
Mark was one of the most vocal members of this group. He was 18 years old and had been a member of NAGTY since 2005. He came from a White-British, Wealthy Achievers category from the 'Affluent Greys' group (Acorn type 8 – see Appendix L). He came from a Secondary Community school in the Cornwall LEA.

He had been admitted to NAGTY based on some 'tests' scores. He had read 95 messages and posted 32 messages between March 2005 and February 2006.



Graph 8: Most active-vocal member in the Astronomy and Space forum (Mark)

Graph 8 above shows the participatory activity for Mark. In the 'Computer Sims' thread Mark posted 10 messages and read 26, in the 'Black Holes' thread he read 15 messages and posted 6 and in 'Using the Faulkes Telescope in Hawaii' thread he read 17 messages and posted 3. Mark contributed to the community by posting 2 messages in the 'Welcome – Introduce Yourself' thread and 5 messages in the 'Suggest a Topic' thread.

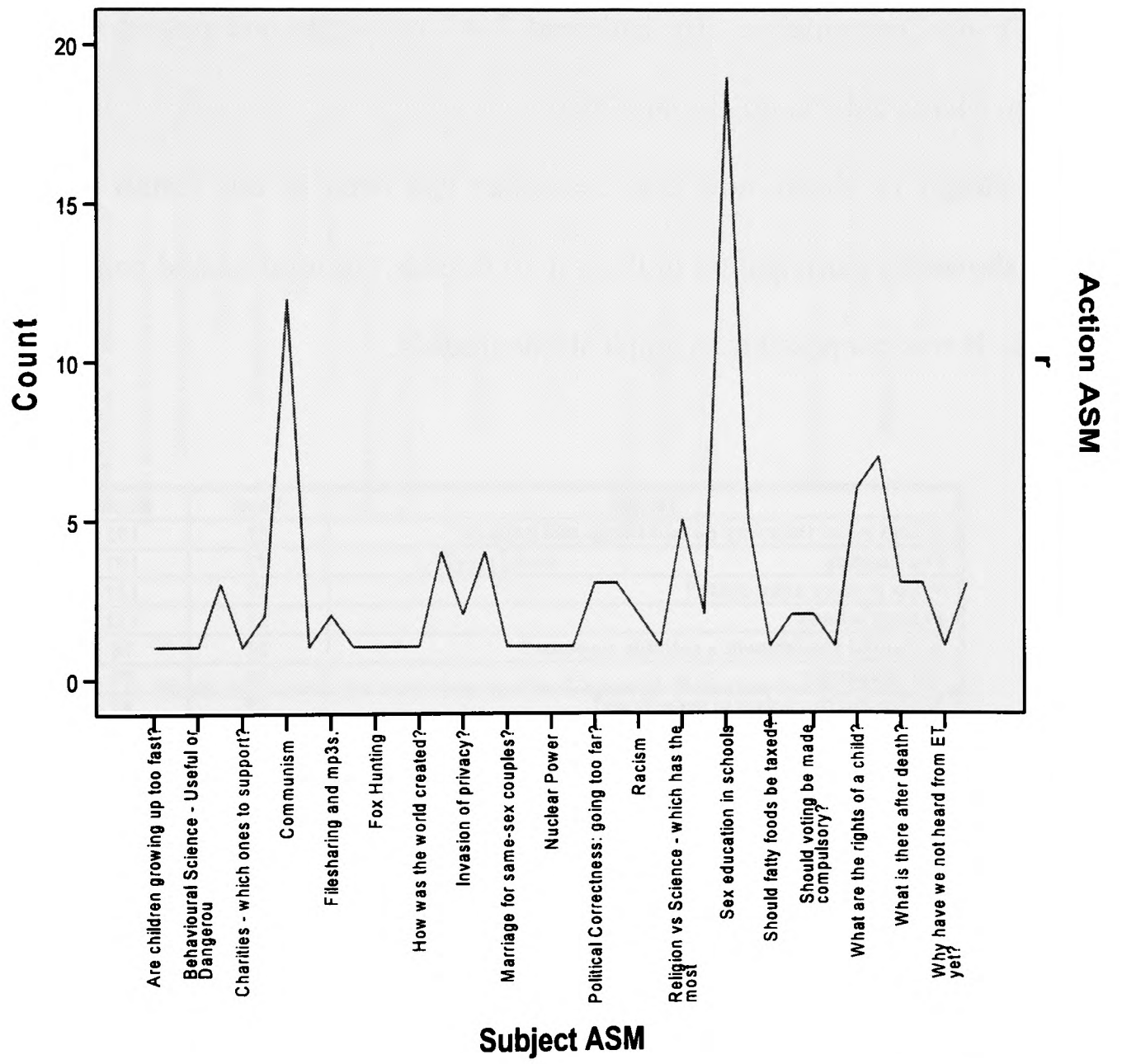


Graph 9: Monthly participation by Mark (AVM) and Bob (ASM)

Mark became a member in August 2005 so there were no reads and posts in any of the topics from March 2005 until August 2005, as the above graph shows. He appeared to have been most active in the months of September to November 2005 and then suddenly lost interest. Bob, who had been a member of NAGTY since 2003, started participating in this forum when it was introduced, and was engaged with the community from March to June especially with the threads 'Impacts from Space' and 'How the Sky Works'. There was no more activity until November, when his interest seems to have been sparked again with the thread 'Space Tourist'. The summer vacation and the fact that the other threads like 'Image Processing' required downloading of computer programs and actually producing some images, may have been the reasons for his non-participation.

7.8.4 General Debates

Peter was one of the silent members of the General Debates forum. He was 15 years old and had been a member of NAGTY since 2003. He was White-British and came from the 'Comfortably-Off' category from the 'Secure Families' (Acorn type 30 – see Appendix L). He was also presently in a Secondary Community school in the Sheffield LEA. Information about the criteria under which he was admitted to NAGTY was unavailable. Peter had read 111 messages and posted none between March 2005 and February 2006.



Graph 10: Most active-silent member in the General Debates forum (Peter)

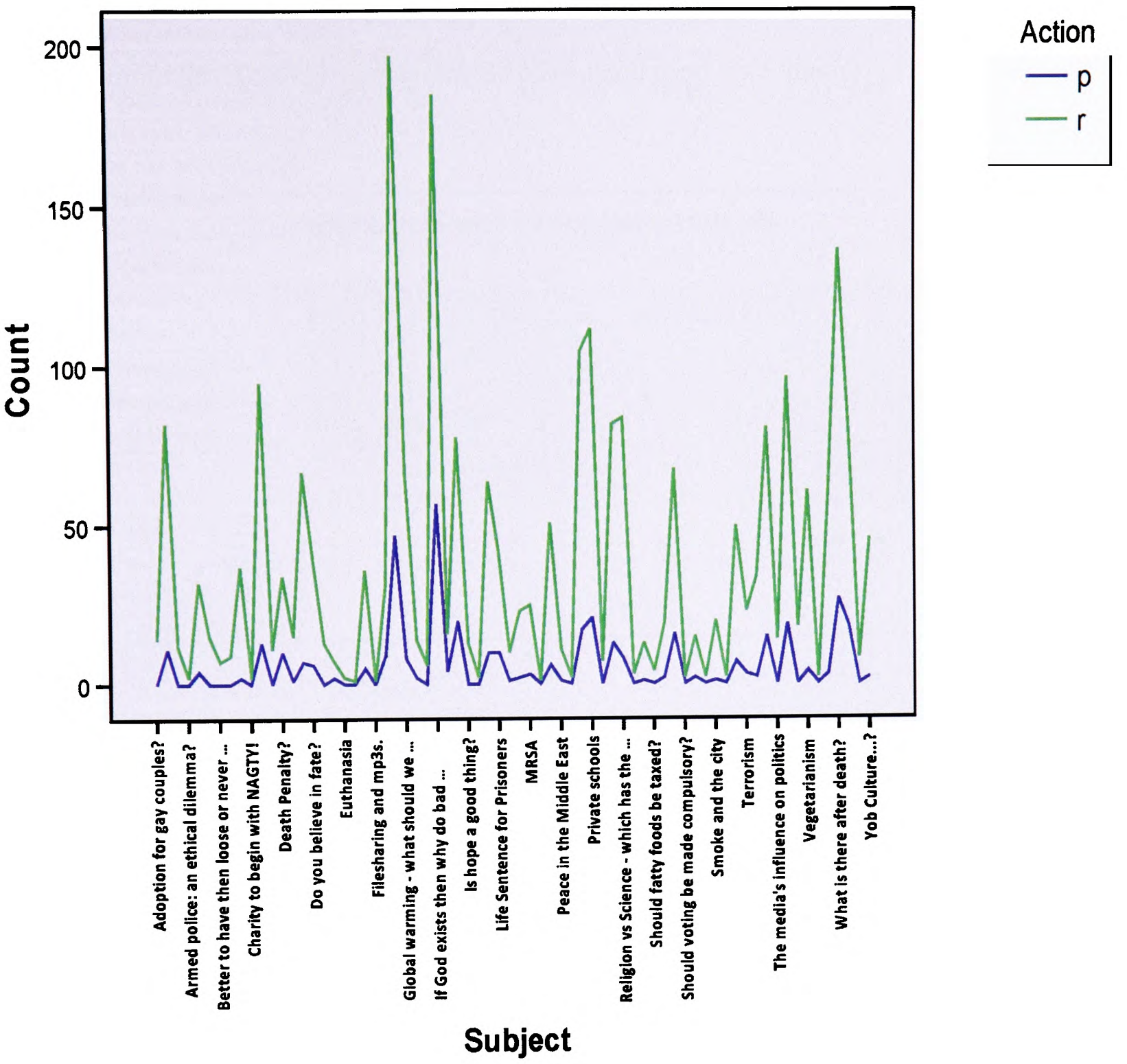
Graph 10 shows the participatory activity for Peter. The threads that Peter was most engaged in were 'Communism', 'Sex Education in Schools', 'What are the Rights of a Child?' and 'What is evil?'. He did however visit almost all of the other debate topics at least once.

Stephan was one of the most vocal members of this group. He was 16 years old and had been a member of NAGTY since 2003. He was White-British and came from the 'Comfortably-Off' category from the 'Secure Families' group (Acorn type 27 – see Appendix L). He came from a Secondary Community school in the Shropshire LEA. Information about the criteria under which he was admitted to NAGTY was unavailable. He had read 2619 messages and posted 422 messages between March 2005 and February 2006.

Graph 11 shows how active Stephan had been in this forum and Table 27 below shows his participation in the top 10 threads. In total he had contributed to 70 threads. It was not possible to graph all the threads.

Thread	Posts	Reads
If God exists then why do bad things still happen?	57	185
Fox hunting	47	197
What is there after death?	27	137
Private schools	21	112
Is Capital Punishment a suitable response?	20	78
The monarchy	19	97
Where did the universe come from?	18	81
Political Correctness: going too far?	17	105
Should the UK adopt the new EU constitution?	16	68
The Iraq War	15	81
Communism	13	95

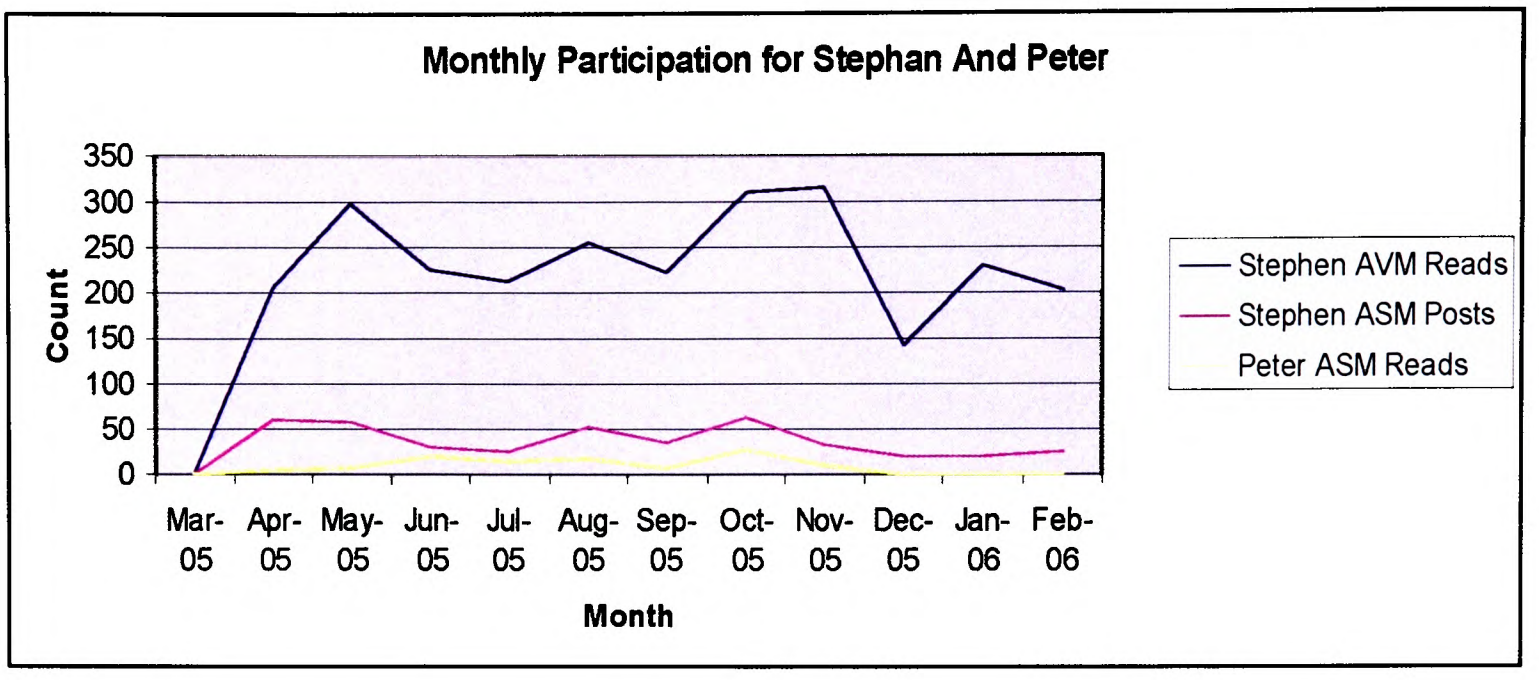
Table 27: Stephan's participation in the General Debates forum



Graph 11: Most active-vocal member in the General Debates forum (Stephan)

In this forum the threads were not terminated at the end of one or two months. The moderation was very minimal so that it was the subject itself and the contributions that were the main driving force. Stephan was very active from April 2005 to February 2006 as can be seen both from the table and the graph. Even during the spring/summer months he seemed to be thoroughly engaged with the discussions, posting and reading messages.

Graph 12 shows that comparatively Peter was most active during the spring/summer months and then in October and November (2005) but then his interest seemed to dwindle. This might have been because he had become involved in other forums.



Month	Stephen AVM Reads	Stephen ASM Posts	Peter ASM Reads
Mar-05	0	0	1
Apr-05	206	59	6
May-05	298	57	7
Jun-05	224	31	20
Jul-05	213	26	14
Aug-05	256	52	17
Sep-05	222	35	7
Oct-05	309	63	28
Nov-05	315	33	11
Dec-05	143	21	0
Jan-06	231	20	0
Feb-06	202	25	0

Graph 12: Monthly participation by Stephan (AVM) and Peter (ASM)

To investigate which subjects Stephan participated in one month, I randomly chose April and found that he had contributed to 26 threads just in that month. Table 28 on the next page shows the total count (reads + posts) for each subject.

Subject	Count
Is Capital Punishment a suitable response to criminal behaviour?	64
Fox hunting	58
What is there after death?	28
If God exists then why do bad things still happen?	26
Political Correctness: going too far?	13
Is Capital Punishment a suitable response to criminal behaviour?	12
Do you believe in fate?	11
Communism	10
How can we help the Third World?	7
Communism	6
Should the UK adopt the new EU constitution?	5
Asylum seekers and illegal immigrants	5
Student perspective on English in the 21st century	2
Should fatty foods be taxed?	2
Sex Education in schools	2
Invasion of privacy?	2
Do all religions ultimately lead to the same one God?	2
Charity to begin with NAGTY!	2
Charity to begin with NAGTY!	1
Would you choose life?	1
Tabloid newspapers	1
Racism	1
Personalised learning - the 'student voice'	1
File sharing and mp3s.	1
Euthanasia	1
Animal testing	1

Table 28: Stephan's participation in the various subjects in the month of April

7.8.5 Summary of active participation and the case studies

In this section participation in the community was explored in terms of active-silent members) and active-vocal members. Reasons behind members choosing to remain silent or to post were discussed using survey results and tutor perceptions. Lastly, some insight into what the learners felt about reading messages was presented.

In the case studies of all the most ASM and AVM members from all the forums, it was observed that with the exception of Gill they all came from affluent backgrounds. Even Gill came from a comfortably well-off working-class background. Perhaps one of the reasons these members were able to participate more is indicative of the family background – their affluent background giving them more

resources like books, more chances to learn, language use at home, better primary education.

The most active members were all White British, and were between the ages of 17 and 19. The only exception was the AVM General Debates member who was 15 years old. This seems to indicate that all the most active members were the older members. This may simply be a reflection of the longer period of time they had been NAGTY members.

From this exploration it was possible to get a better indication of how active both the vocal and the silent members were. It became clear that some subjects could hold their attention over several months. The fact that the active-silent members repeatedly visited certain subjects showed that they were probably adding some information to their personal knowledge base just by reading the messages. It seemed as though they were following the discussions. It is possible then that by engaging with them their need for exposure to new and challenging ideas was being met. Even if they were not voicing their own opinions they were being given the opportunity to view how other gifted learners were using higher order thinking skills to discuss ideas.

7.9 Participation in the middle of the continuum

After exploring the participation activities of the most active-vocal and the most active-silent members of all the forums, it was deemed necessary to also analyse the participatory activities of those members who were somewhere in the middle of the continuum. However, this analysis did not generate any new patterns of participation. For the medium group posters and readers the interactions largely remained the same: extended subject interest over months in some topics, time of

logging in, amount of time spent logged in, revisiting threads repeatedly before posting. It was also found that there were too many different variables to represent such participants. The number of posts or reads would depend on the amount of time the participant had been a NAGTY member, the type of subject, age and gender and individual preferences. It was, however, possible to group some of the middle participants and obtain a graphical representation of the overall participation across the whole spectrum with a comparison of this participation across the forums. Beginning with the broad categories of reads and posts, ranges for each were chosen after examining the data and each range was assigned a number from 1 to 3 for the posts and from A to C for the reads as follows:

POSTS			READS		
1	0	P	A	0	R
2	1 - 10	P	B	1 - 50	R
3	11 < P < 93		C	50 < R < 1196	

Different group combinations were then created and the number of members who fell within each category for each of the forums were calculated.

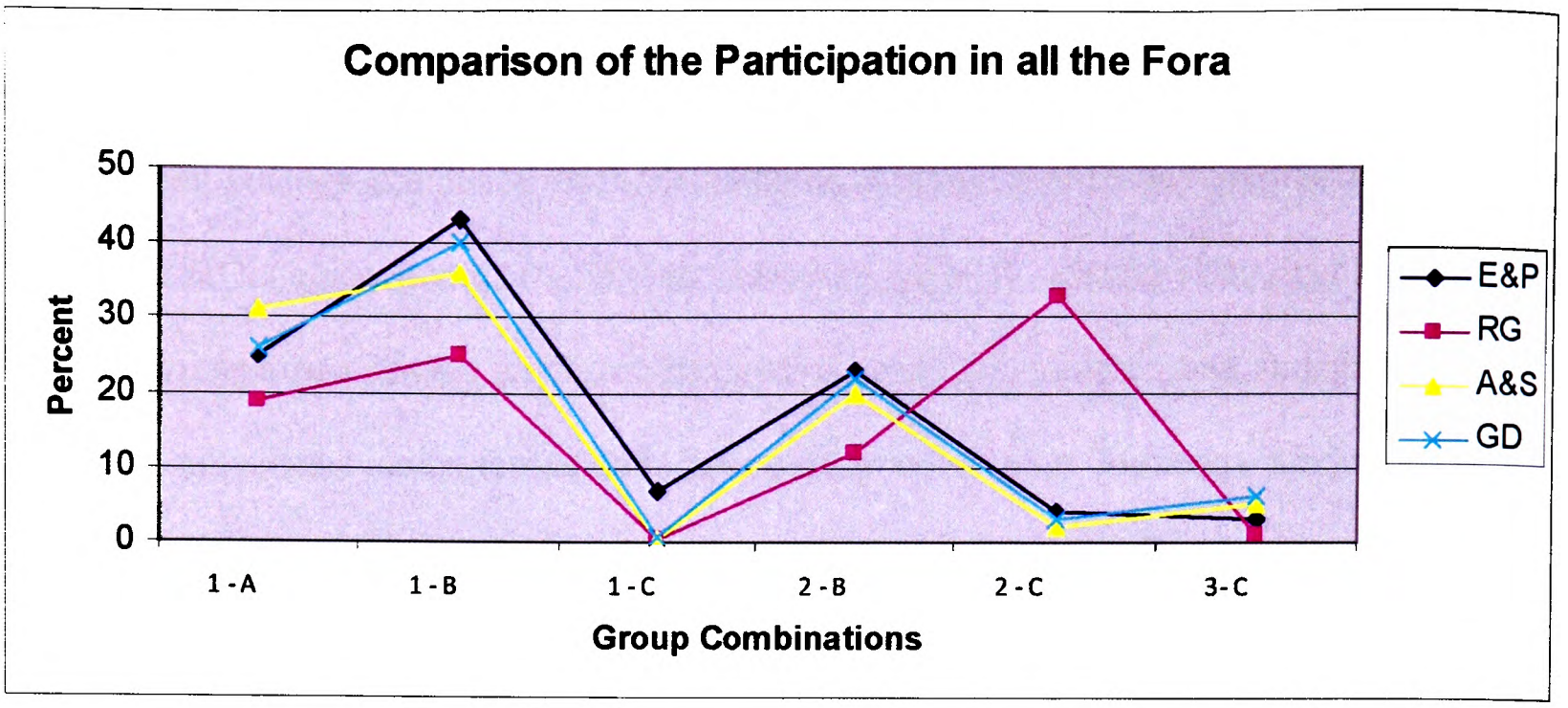
GROUP COMBINATIONS

1 - A	0 Posts	0 Reads
1 - B	0 Posts	1 - 50 Reads
1 - C	0 Posts	50 < R < 1196 Reads
2 - A	1 - 10 Posts	0 Reads (Not possible)
2 - B	1 - 10 Posts	1 - 50 Reads
2 - C	1 - 10 Posts	50 < R < 1196 Reads
3 - A	11 - 93 Posts	0 Reads (Not possible)
3 - B	11 - 93 Posts	1 - 50 Reads
3 - C	11 - 93 Posts	50 < R< 1196 Reads

Groups	Represents			RG 652		E&P 423		A&S 786		GD 2632	
1 - A	NAM*	0 P	0 R	124	19 %	108	25 %	250	31 %	679	26 %
1 - B	ASM-Medium	0 P	1-50 R	166	25 %	182	43%	284	36 %	1040	40%
1 - C	ASM-High	0 P	50 < R <1196	51	7 %	2	.4 %	3	.4 %	20	.8 %
2 - A	AVM-Medium	1-10 P	1-50 R	78	12 %	98	23 %	158	20 %	589	22 %
2 - B	AVM-High	1-10 P	50 < R <1196	218	33 %	19	4 %	14	2 %	68	3 %
3 – B**	AVM-Medium	11-93 P	1-50 R								
3 - 3	AVM-High	11-93 P	50 < R <1196								

*NAM Non-active members ASM active-silent members AVM active-vocal members
** The last two groups were too small to be graphed

This data could then be graphically represented as shown below



Graph 13: Overall participation in the forums

The above graph shows that the percentage of non-active members in each forum was: RG: 19 per cent, E&P: 25 per cent, A&S: 31 per cent, GD: 26 per cent. These were members who did not post or read any messages but were listed as members. The A&S forum had the largest number of members signing up but not taking any part at all. This may have been a result of the larger number of younger members in this group.

The percentage of active-silent members in each forum was: RG: 32 per cent, E&P: 43 per cent, A&S: 36 per cent, GD: 41 per cent. The E&P forum had the highest number of silent readers amongst the study groups. This might have been because of the higher age range of this group and also because the messages posted in this forum were often quite long, well thought-out messages in which the members showed application of critical thinking. The readers were being exposed to some philosophical topics that required a lot more reflection and a deeper level of processing. It may also be that the higher cognitive level of the messages, although

interesting and challenging to read, may have been daunting to respond to for some members.

The General Debates group also had a large number of readers. This group had a lot of general interest topics like 'what being gifted means to you' or something very topical. The messages posted were generally short, easy to read but quite informative: a place to get together and find out what was going on generally.

The E&P group had the largest number of active-vocal members who were medium posters and medium readers (RG: 12 per cent, E&P: 23 per cent, A&S: 20 per cent, GD: 22 per cent) and the RG had five times more active-vocal members who were the highest posters and highest readers (RG: 34 per cent, E&P: 7 per cent, A&S: 7 per cent, GD: 9 per cent) than the other forums. The range of posts for this group was from 11-93 posts and 51-1196 reads. This may be attributed to the nature of the forum where the messages tended to be much shorter and contained more surface processing than the ones found in the Ethics and Philosophy forum. The RG forum (a predominately female group) had significantly more messages coded in the relational dimension than the other groups.

To take the case study analysis one step further, I also examined the daily logging patterns of the AVM member (Mike) and ASM member (Elaine) and these are presented in the next section.

7.10 Logging patterns

7.10.1 Day-to-day analysis of an active-vocal member - Mike

Mike was the most active-vocal member in the Ethics and Philosophy forum (see p. 234-236). To gain a further understanding of his participation, analysis which examined the day-to-day activity within each month was undertaken. This made it

possible to examine which topics or threads Mike had logged into at what time on each day that he signed in. Appendix T shows the monthly activities.

In the month of April Mike logged in 7 days and visited between 1-3 topics. For the first three days, he posted a message every day and spent between 29-45 minutes logged on. This dwindled down to one minute each day. After a break of almost three weeks, Mike logged in again in May for 11 days quite regularly. He visited between 1-8 topics and spent between 1- 49 minutes on the board. He posted 5 messages during this period and was logged in at night often between 10-11pm. On the first day (14 May), Mike read 5 messages and was logged in for 42 minutes and visited 4 topics.

In June, Mike logged in on 14 days, in which he posted 10 messages. He visited only 1-2 topics most days, with the exception of one day (June 26) which was a Sunday when he remained logged in for over an hour, visited 4 topics and posted 2 messages. This was done in the early hours of the morning (1am- 2am). Mostly he logged in either in the afternoon between 2-3 pm or at night around 8-10 pm.

In July, Mike logged in 9 times and the time was usually around 10-11 pm. During this time he posted 7 messages. Some days he posted 2-3 messages and was logged in between 15-34 minutes on these days. Most other days he seemed to just log in to see if there was a response. In the process he presumably had to engage with what had been posted.

In a similar manner it was discovered that in August, Mike logged in 9 times again between 10-11 pm but sometimes even later than that. This might have been because it was vacation time. However he only posted 3 messages during this time.

In September, Mike logged in 10 times but the time he logged in was during the afternoon or early evening. The time change was probably because of the school

year beginning. He posted 4 messages and was not logged in for more than 10 minutes most days. The exception was 6 September when he was logged in for 41 minutes. At this time he read only 1 message and posted 1. Referring back to the actual posting it became evident that Mike was responding to an intense ongoing debate from the month of April (Is science true because people believe in it, or do people believe in science because it is true?). He seemed to have signed in to check the response to his previous post and then taken his time thinking and composing a reply to it. The message that he posted (see Appendix S) was one which gave evidence of higher order thinking skills such as analysis and synthesis.

In the month of October Mike logged in 16 times. On the days he posted a message he stayed online for a longer period of time than when he did not.. This was usually done around 9-11 pm. Some days he signed in only for 1 minute. This might have been to see if anyone had responded to his post and this was usually done in the early afternoon. In November, Mike logged in10 times, posted 11 messages and read 41 messages. He visited from 1-6 threads and posted 2 messages on 4 different occasions on the same day. Mike appeared to be persistent in his efforts and remained engaged in almost all of the threads until they were terminated. The times he logged in remained the same.

In December Mike logged in 21 times – sometimes twice a day (3, 7 and 10 Dec). Two of these days were Saturdays. On 3 December (Saturday) he posted 2 messages between 1-2 am and then another 3 later that day between 6-7 pm. He had started participating in a new thread called 'World Religion' and in the December topic, 'Is acting for the greater good a 'good' thing to do?' as well.

The message on the next page is what he posted in the December topic. The message is long, but it is necessary to show the entire message to show its intensity and the higher order thinking skills being used. This is an example of stage 5 (synthesis) in the conceptual dimension, one he posted around 1 am. It seems reasonable to suggest that Mike was enjoying discussing this topic since he was still logged in at this hour and he was taking the trouble to think things through. It showed how involved he was in the discussion where he offered his mathematical 'solution' to the moral system by quantifying happiness into units. He seemed to be very earnestly suggesting a system which was fundamentally Utilitarian and had been synthesised from various sources.

In January Mike logged in 16 times, posted 9 messages and read 67 messages in all. On 13 January he stayed logged in for more than one and a half hours between 8-10 pm. He visited 7 different threads, read 9 messages and posted 2 messages. The pattern of his intense involvement remained similar to the previous months. In February, Mike logged in 13 times. On 22 February (Wednesday) he signed in at three different times. Once at 3 am when he visited the thread 'Homework – What are your views?' and then again between 10-11 pm he read messages in the thread 'Descartes: The Ontological Argument for the Existence of God'. He read 42 messages but posted only 1.

Overall, Mike came across as a very strong personality with some very definite views but who was keen to hear what others had to say. While he appeared to have a dominant presence in some topics he did not post just for the sake of it. He had well thought-out messages that seemed to demand respect from the community members.

> Is acting for the greater good a 'good' thing to do?

Yes, if it actually *is* for the greater good.

I will outline where I get my moral system from. It's actually quite mathematical when you break it down... but it works for me.

Ok - my definition of 'good' for the purposes of this debate is:

'Happiness felt by a person.'

So 'greater good' is:

'The maximum amount of "good"' for every living person, and every person who is to be born in the future, for all of time.'

So we really ought to try to quantify 'goodness'. Obviously this is subjective, but that doesn't matter. If you think about it, you can compare two situations and decide which you would prefer ... usually there will be one that is obviously better.

Now, imagine doing this for every possible conceivable situation - you would end up with a scale of 'happiness' ranging from your worst nightmare to your ideal world, and everything in between. Now, you could assign a number to each of these.

Of course, all this is not practical given the huge number of possibilities, but it works in theory. So now you have a personal scale of how much happiness each of these situations would give you. Each persons scale will be different, but the actual ratings are the same – so, being given £10 might give me 100 happiness units, but it might only give you 60 happiness units. On the other hand, donating £10 to charity might give you 100 happiness units.

So what you could do, in theory, is, given any situation, compare that situation to every person in the world's individual happiness scale, take all the values, add them together and divide by the number of people in the world - giving the average happiness that the situation in mind would cause for each person.

Now, you may be thinking this is all completely insanely over-complicated ... may be you're right! But here is a problem with the plan so far: Say I take £10 from a person ... that decreases their happiness by 100 units ... then I give it to another person, who gains 100 happiness units. Surely this means that on average, stealing money to give to another person is neither good nor bad? Well, so far, yes. But the system is a bit more complicated than I have explained so far.

Here is where it ties in with society and time. Let's go for time first.

Obviously, an action does not just have one effect and then stop. It might make everybody very happy for a short time, but in the long run everyone is worse off (drugs and alcohol abuse could go under this bracket). So for the next bit we have to pretend there is a basic unit of time. We also have to try to predict the long-term consequences of the action, which is the tricky bit.

What we do is this: assume the action is performed at the exact instant - then go one unit of time into the future, and evaluate the net happiness of the world. Go forward another unit of time, and repeat. Find the average. Keep going until it is unreasonable to predict any further, or there are no humans left. (If the consequences of an action are uncertain, follow the different 'branches' and average them together as well).

The society part is as follows: when trying to decide on a general rule for an action ('should I steal?'), include in the calculation the assumption that every other person will follow that rule as well. So following on from the previous example, the rule might be that it doesn't matter if you steal because the net happiness of the world does not change. Now, if we say that everybody follows this, and thus steals, we can tell that the world would suffer as a result - nobody would be productive, violence would increase, etc etc. So the actual value of happiness is much lower than suggested.

Anyway, all this basically gives you the overall, average happiness for every person, for all time (that is reasonable, at least). The so-called 'greater good'. So for any situation where there is more than one option, evaluate all the choices in this way, and choose the one with the highest net happiness.

This is just a theory I have been thinking about - how to break morals, etc down into firmly defined rules which still work. Perhaps I have been spending too much time programming computers! It is basically Utilitarianism broken down to its fundamentals with a few modifications.

Is there anyone who understood what I was trying to explain and has an opinion on the system? Any improvements or problems? (Mike, E&P forum)

Mike's responses to the online questionnaire

It was very fortunate that Mike was one of the members who had responded to the online questionnaire. He said that he loved reading well thought-out messages, and that as he read the messages, often his own views on a certain topic would change. He felt that he learnt a lot from just reading the posts, and that he didn't feel the need to post a message all the time. He felt discouraged when he did post and his message did not get any response, but enjoyed getting messages back that challenged his opinions. He said that as he wrote he found himself thinking more clearly than when he spoke and found it easier to state his viewpoints in the online environment compared to face-to-face discussion(s). He also felt that he was too old compared to others on the forum.

Engaging with the forums helped him a little with his schoolwork and made him feel more confident at school. However, the forums had helped him considerably to accept himself as someone with more intense interests and had offered him challenges that he could not find at school; the community had provided him with the opportunity to be in the company of other like-minded individuals with whom he could debate. His feelings were that the tutor encouraged him to think and was like a role model for him because of her expertise in the subject. His responses revealed that he preferred to log in late at night and usually ended up reading over 30 messages. He disclosed that he also belonged to many other non-NAGTY forums in addition to the Ethics and Philosophy forum. At the end of the questionnaire instead of any other comments he generously added that he hoped my research went well.

7.10.2 Day-to-day analysis of an active-silent member - Elaine

Elaine was the most active-silent member in the Ethics and Philosophy forum. In the month of April, she logged in 11 times and read 22 messages. Although Elaine did not spend more than 2 minutes on the board each time she logged in, it was obvious from the topics she went back to visit that she had read the messages and something had sustained her interest for her to go back to it repeatedly. She was mainly interested in the April topic of the month (Is science true because people believe in it, or do people believe in science because it is true?) and the thread called 'Eating Human Remains'. Her logging pattern was between 2-5 pm or sometimes early morning around 9 am and very occasionally early evening between 7- 8 pm.

In May, (see Appendix R), Elaine continued following the April topic showing her engagement with the topic. She logged in 9 times, again only for about a minute each time, around the same times as in April. She visited two new topics; 'Thoughts about an Outreach Event' and 'Questionnaire Feedback' and also came back to check the 'Eating Human Remains' thread.

Elaine logged in 18 times and read 29 messages in June. On two occasions (9 and 13) she signed in twice. She was still mainly following the April topic (11 of the times she logged in) but now seemed to have moved on to June's topic of the month, which was 'Should life be preserved?'. She did, however, check in on the 'Eating Human Remains' and 'Thoughts about an Outreach Event' a couple of times.

In July Elaine logged in 16 times and read 27 messages. On 21 July she logged in twice, once at 7am and then again around 6 pm. She checked the July topic twice on this day and visited April, June and July topics. Throughout the month Elaine was persistent in following the April, June and July monthly topics and the

'Eating Human Remains' thread and also looked in to the 'July Essay Challenge' thread.

In August Elaine logged in several times quite early in the morning (7-9 am) even though this was a month when there was no school. She signed in 13 times and read 21 messages. She seemed to be following the discussions of the current month (August) closely and on occasion checked in with the April thread, 'Eating Human Remains' and 'Thoughts of an Outreach Event'. She also added in another thread called 'Criminality and Determinism', which she visited 3 times. Elaine spent between 1-6 minutes logged in. It appeared that she was very efficient in navigating the interface and knew exactly what she wanted to see and perhaps read only selective messages.

In September Elaine logged in 14 times, and read 36 messages but in October and November she logged in only 6 times overall. She seemed to be still quite engaged with the April, August and September discussions, the 'Criminality and Determinism' and the 'Eating Human Remains' threads. In addition she showed her interest in the 'Goodbye Ben' thread by signing in twice on 3 and 5 September. Elaine started logging in later at night around 7-9 pm more than usual, and then in October she logged in between 9-11 pm. In November she stopped logging in. On her last day she visited the 'Emails' thread, perhaps looking for contacts. There was no response from Elaine to the questionnaire, which was given in the first week of December.

7.10.3 Summary of the logging patterns

The daily logging patterns of Mike and Elaine over the period of March 2005-February 2006 revealed further information about the range of topics they chose to visit (not only the sample forums), the amount of time spent online and the times of the day or night they chose to log in. It became evident from Mike's logging patterns that he was keen to take advantage of the 'any time' feature and took advantage of it by working late at night. Elaine, on the other hand, took advantage of the 'any place' feature by also signing in during the vacation periods.

It was also possible to see that some members were getting the opportunity to develop their higher thinking skills – this was what the second operational research question asked – as their activity showed them first reading several messages and then posting responses which were carefully thought out. It became evident that the active-silent members were actually reading the messages since they logged in to the same thread repeatedly. It showed that they were interested in the responses even though they themselves refrained from posting.

7.11 Conclusion

This chapter started by providing general details of the members that were fundamental to understanding first who the members of the sample forums were and how representative the sample was of the entire NAGTY membership and the national population of gifted and talented learners. Information about how each form functioned and the topics that were selected to be coded were identified.

The average age of the forums members was around 15-16 years. They were mostly White British (75-80 per cent) and most of them generally came from an

affluent background. Most of them came from Secondary Community and Voluntary Aided schools and had been admitted to NAGTY based mainly on their CATS or MidYis scores. There were more females in the RG and E&P forums, but approximately the same number of males and females in the A&S and GD forums. The E&P group had the highest number of members aged 17-20 (46 per cent), compared to RG (32 per cent); A&S (36 per cent); and GD (31 per cent) and the A&S group had the highest number of members aged 12-13 (18 per cent) compared to RG (12 per cent); E&P (5 per cent); GD (13 per cent).

Even though data were available from only 2 per cent of the membership of these forums, there were 75 people who had identified some form of disability. This was perhaps an indication of the way some gifted and talented learners may still feel included in an online community where others cannot perceive them as different physically or mentally. There were a total of 51 alumni members, showing that there was interest in the forums even after the students had graduated.

The goal of this chapter was to bring to light aspects of how participation was being realised (operational research question 1) in this online community of inquiry by looking at the different ways the members were participating. Two distinct ways of participation became evident: There were those members who chose to remain silent (ASM) and only read messages, and members who not only read but also posted (AVM) messages. Responses from the questionnaire were helpful to identify reasons as to why members preferred to remain silent. Case studies that examined each type of participation (AVM and ASM) within each forum were very helpful in showing how participation varied within them. It became possible to observe that some topics generated enough interest for the members to continue visiting the board even when a new monthly topic had been introduced. From the analysis of data of members who

fell in the middle of the participation continuum, it was revealed that both the E&P forum and the GD forum had the most silent members. In the E&P, this could be attributed to the higher cognitive level of the philosophical nature of the messages posted, whereas in the G&D forum the silent reading could be because this was a place with a laid-back approach where members could come to just read or discuss anything current in school or the world. RG had the most vocal members which could be attributed to the shorter, more general level of messages that were targeted more at the social level.

By observing the logging patterns of active-silent members it became possible to conclude that they were not only just logging in but actually reading the messages, because they came back repeatedly to the same thread. This was an important finding, since it is questionable whether any learning occurs when a member logs in, reads a message but does not post any response. That readers 'do' learn was also confirmed by respondents to the online questionnaire.

By examining the amount of time spent on messages and tracking them it was possible to see that there were members who were getting the opportunity to develop their higher order thinking skills (second operational research question) as they constructed counter arguments and stated their own opinions in the discussions.

Synthesising the results of the two operational questions mentioned above from two sources (NAGTY membership data and online questionnaires) it was possible to start getting an idea of the potential of this online community. It would appear that from the way the members were participating they were getting involved in challenging debates either by reading or by contributing with a message themselves. The intensity of the discussions showed that the capacity of getting the learners to develop higher order thinking skills was indeed possible. While some

members revealed that they were becoming more confident, felt happier because they had friends in the community, felt encouraged and appreciated the chances for reflective inquiry, others (a relatively very small number, felt intimidated by the presence of a large audience and the greater ability of others. The intimidation was also attributed to technical problems and the presence of power cliques. The varying ability of the members might at first glance appear to be problematic. However, it is precisely the difference in ability that makes it possible for the learners to become aware of their own weaknesses and then try to achieve the higher levels, as they see them modelled. These issues are discussed in more detail in the next chapter which builds on this analysis in light of what emerged from the analysis of the text messages and focus group meeting with the tutors.

CHAPTER 8

Online Discussion Forums: Exploring their Potential

8.1 Chapter overview

In the last chapter some necessary preliminary questions about who the participating members were, what their mode of participation was and how the forums functioned were asked. This fundamental 'ground clearing' paved the way for a deeper analysis where the theoretical framework developed in Chapter 4 could be applied.

The analytical approach in this chapter is more qualitative in nature and is a multi-layered process which explores participation at three levels. First, it investigates the interactions at a sociological level, 'The relational dimension' (Section 8.2), examining the structure and dynamics of the community. By participating in the community, how do the members construct, maintain and alter its structure? Areas studied in examining the online social dynamics include culture, values, socialisation, cooperation, conflict, power, exchange and identity. This dimension helped to answer the first operational research question.

Second, the analysis looks at participation at an epistemological level, 'The conceptual dimension' (Section 8.3), which examines interactions to see how the learners link new information with existing knowledge to construct new meaning. To enable this Dewey's (1933) practical inquiry model, which was discussed in Chapter 4, is used for an in depth analysis of those experiences that are deemed to be cognitive in nature to see how the gifted and talented learners make use of the discussion forums as a cognitive tool to develop higher order thinking skills. This dimension helped to answer the second operational research question.

Third, the analysis looks at participation at a pedagogical level, 'The pedagogical dimension' (Section 8.4), which examines the implications of putting

gifted and talented students at the centre of their own learning, providing them with the opportunity to participate in a robust learning environment which can accommodate their individual needs and assure comprehensive and competent performance.

Section 8.5 presents the perceptions of the community members (students and the tutors) about the ability of the online community to meet some of the needs of the gifted learners - the overarching research question.

8.2 The relational dimension of participation in a community of inquiry

The relational dimension refers to the varying ability of participants to relate to each other by building rapport and associations with other participants. The categories in this dimension were introduced in the theoretical framework (please see p. 143-147) as being receiving, responding, valuing, organisation and internalisation of value; categories which help to enhance the social presence of the members, so that the others may perceive them as 'real people'.

A sociological analytical approach advocates the examination of online social relationships and interpersonal exchanges that Haythornthwaite (2002) calls 'building blocks for distributed online learning communities'. Of all the messages coded 46 per cent in the three forums were attributed to categories in social presence. Driven by my history as teacher, learner and researcher the overriding questions in my mind as I observed the social exchanges between these gifted students and their tutor were, 'To what extent does participation in this community help them with their ''giftedness''?' and 'How does it do so?'

I explored the online experiences of gifted learners through their stories of participation, through their perceptions and through their decisions to participate in the online learning activities. What emerged was that this community was providing them with a sense of identity and presence, a feeling of belonging to a group that understood their habits, a place where they could be with others like them, a place where they could share personal ambitions.

In the sections below I elaborate on these findings by providing some illustrative examples as evidence, discussing the implications of participation realised through social interaction which gave rise to two major themes:

- sense of presence and identity (8.2.1);
- sense of community (8.2.2).

Section 8.2.3 identifies some sources of tension and conflict within the community. Finally, in order to support the findings from the qualitative analysis, using data from other sources (the online questionnaire and focus group meetings with the tutors), Sections 8.2.4 and 8.2.5 examine student and tutor perceptions of the community followed by a summary (8.2.6) of all these sections.

8.2.1 Sense of presence and identity

The way the participants of this online community seemed to disclose information suggested that they could identify with the others as gifted students such that they could impart to them some personal information both about themselves and about their giftedness.

Disclosing pride, ambitions and interests

There were several instances in which the gifted learners disclosed their pride at being gifted and shared their ambitions and interests with the others. In the example below, Mike[4] a member of the Astronomy and Space forum, introduced himself to the others and revealed that he had set his heart on going to Cambridge as he wanted to become an astronaut. He also disclosed that he had a high IQ by mentioning that he was a member of MENSA, which is an internationally known high IQ society who accept members in the 98th percentile.

> 'I'm Mike and I want to go to Cambridge University, I want to become an astronaut. I have high hopes. I'm said to be a genius, I'm in MENSA! MENSA rules.' (Mike, A&S forum)

It is suggested that in finding a place where these gifted students can share some of their innermost feelings (if they so desire) that they normally would not in a regular classroom, they might be able to remove their masks, and accept that they are gifted, thus escaping feelings of loneliness and isolation from peers (Gross, 1998). The online space might also be affording them an opportunity to put *on* a mask; like taking on a virtual personality – becoming more vocal, more arrogant, more mature.

However, while the community space might allow some members to be genuinely proud and accepting of their giftedness it might also foster arrogance in others. In the following message posted by George, who was 11 years old in the same forum, he revealed that he was 'only in year seven' and the fact that he was 'already' two years

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[4] All the names are pseudonyms. When quoting, the first part is the name of the participant, and then the source of data is given where: Q is Questionnaire; FGM is focus group meeting, A&S is Astronomy and Space forum; RG is the Reading Group forum; E&P is the Ethics and Philosophy forum and GD is the General Debates forum.

ahead of the others in two subjects. He went on to add that he did not want to 'gloat', but then proceeded to do exactly that.

> 'Hi everyone! My name is, well, you already probably know. I'm only in year seven, but I am already two years in front on my Maths and IT. I don't mean to gloat, but my I.Q. is already 149, so I have plenty of time to raise it. See y'all later!' (George, A&S forum)

George may simply have been very excited to have become a member of the gifted community and was not yet aware of how to relate to the others – an opportunity being provided for him to say or do - as he showed later by eagerly posting three other messages. In one of them he wondered if he was not the youngest member of the astronomy group and whether his IQ would change as he grew older. Interestingly, John, a 13-year-old, answered his question without disclosing his own IQ and pointed out his dislike for the concept.

> 'according to a thread some time ago over in General, I.Q. takes into account your age and therefore should theoretically remain unchanged throughout life. I hate the things myself - they tend to only cater for certain learning-types.'
> (John, A&S forum)

It can be speculated that this message might have led George to reflect on his own messages. It may also be the case with George that the illusion of anonymity which was offered by the virtual environment helped to remove the usual barrier to personal expression that young adults have during their during adolescent years. They are usually quite conscious about how they are viewed by others.

Most of the other participants were more discreet about this kind of information, but they were very enthusiastic about sharing their love for books or science and generally what their future aspirations were. Henry in the following example revealed his ambition to become a writer and shared his admiration for Thomas Hardy, whose book *Far from the Madding Crowd* was being discussed in the Reading Forum.

> 'I've wanted to be a writer for years but I really can't think of how to explain what it is I admire about Hardy's style. I think it's the way he creates such a relevant setting and the atmosphere with all the description. Language analysis is something I have a real problem with at school so I love Hardy but don't know why.'
> (Henry, RG forum)

Disclosing personal information

There was a sense of camaraderie between the participants that seemed to engender trust, warmth and understanding, which in turn gave rise to a supportive atmosphere. This was particularly evident at the beginning of each forum in the threads like 'Suggest a topic' or 'Welcome'. As the members progressed through the various cognitive tasks set out for them (reading a book, downloading software for image processing or reflecting on an ethical dilemma), they were respectful towards each other even when there was disagreement. They readily admitted to making mistakes, asked for help and joked around with others and disclosed personal information.

In one case, Harry shared some intimate information about his uncle's death. This was to bring home a point in a debate in the Ethics and Philosophy forum regarding the quality of life when someone was sick and why euthanasia might be an option to end their suffering.

> 'My uncle recently died from MS and had been suffering with it for a long time. I believe that the quality of life that he had in his last years did not really justify keeping him alive …'
> (Harry, E&P forum)

In another case, Jane felt secure enough to admit to having some financial difficulties while procuring a book for the Reading Group forum. She also pre-empted the suggestions that the community members might give, 'You'll probably say …' and answered them by saying, 'but the library van leaves …'. This indicated that she was reflecting on what she was writing or saying as if she was having a conversation with herself.

'Well I picked it up in Waterstone's and read the first couple of pages before feeling guilty and putting it back on the shelf because I hadn't got any money. You'll probably say 'get it out from the library' or something but the library van leaves just as I get off the bus after school on Tuesday and every time I go to my local library I get glared at by old people as though I'm going to mug someone.'
(Jane, RG forum)

In another instance, Joe did not hesitate to mention that he had a physical handicap, something he might have been unable to do in a classroom where 'nerds' are usually associated with having thick spectacles. He also revealed that his interest in astronomy and space might have been initiated by his father who owned a telescope that he calls 'snazzy'.

'Hello, I'm Joe (obviously, from the box to the left of this message). I've always been keen to look at the sky, despite being short sighted. When comet Hale-Bopp (hope that's spelt right) was in the sky, I couldn't see it because at that time my glasses were so bad they barely made a difference! Never mind, plenty else to look at, with help from my dad's snazzy telescope.' (Joe, A&S forum)

This ability to disclose information and reflect on it implies a sense of self-awareness that is proposed by Cutler (1995). He brings to light the following five types of presence and cites their authors (personal, social and an environment of interaction as suggested by Carrie Heeter (1992), and public and private awareness as suggested by Lea and Spears (1991) and Matheson and Zanna (1988)). Cutler (1995) suggests that 'personal presence and awareness is a human capability for reflectivity' (p.17). He goes on to cite Mead (1934) and Cooleyno ref (1964) who believe that reflectivity is fundamental to establishing self-concept. Cutler extends this further to include that in the virtual world establishing self-concept entails an awareness of control of disclosure and says that 'the more one discloses personal information, the more others will reciprocate, and the more individuals know about each other the more likely they are to establish trust, seek support, and thus find satisfaction' (p.17). Being able to disclose personal information is about building relationships – an

important category of the relational dimension. The online community was providing these gifted learners with opportunities to develop relationships with others.

Friendly and safe environment

The online community was seen by the participants as a place where new friendships could be fostered. In the example below, Sean does this by suggesting that although his name is Sean, his 'friends' called him Sna. This seemed like an invitation for others to become his friends.

> 'I'm Sean friends call me Sna though! Really interested in space since long time, especially black holes, time travel, dark matter, etc. I want to be a Cosmologist when older!' (Sean, A&S forum)

The following messages represented the feelings of many members who were excited at being given an opportunity to participate and make friends;

> 'I chose to join this course due to the fact that space itself never ceases to amaze me. Is anyone else going to the Durham Higgs to Hubble Summer School course? I hope I can make some new friends!' (Gina, A&S forum)

As the members perceived the community environment to be safe and friendly it became a place where they could complain together. They complained about: teachers, not getting adequate provision at school, other students not understanding them at school and about the community problems. Sandy in the message below showed her deep interest in astronomy and then complained that they 'never get to learn it at school'. This may imply that she was grateful to this community for supplying her with a place where she could learn more about her interest.

> 'Hi everyone, I'm Sandy, I'm very interested in space and how it works, but we never get to learn about it at school.' (Sandy, A&S forum)

The members also complained about various technical difficulties that affected the way they participated in the community. This included the length of time it took

between posting messages because of moderation. Sophia, for example, complained about the amount of time moderation took and suggested that the messages should appear 'instantly' and be 'moderated later'. It would appear that Sophia had not really thought about the point of moderation and was more concerned about the flow of the conversation that sometimes got disrupted because of the asynchronicity of the messages.

> 'I find it frustrating that both Heather and I have posted more or less the same thing. Is it really necessary to moderate this so heavily? Time could be saved and more discussion could be engendered if the messages appeared instantly, and were moderated later.' (Sophia, Q)

A sense of camaraderie

Being able to complain together could be seen as an example of solidarity, a sense of camaraderie and a precursor to a sense of community. There were members who seemed to be aware of their own giftedness and who also seemed to realise that the other community members were like them in some way and would understand them, and thus were able to reveal themselves. One member summed up this feeling with the following comment on the online questionnaire:

> 'I really love NAGTY! It has given me a brilliant chance to develop my own character and grow to be proud of my intelligence, by giving me the chance to have intelligent and stimulating discussions with other like-minded students. I have made many online friends through the forums.' (Rachel, Q)

This sense of shared identity with other gifted learners, of increased self-awareness and presence cumulatively lead to a broader sense of community. It appeared that the community gave rise to the self while at times it was the other way round, so that it became difficult to assess exactly where the sense of self ended and

where the sense of community began. The next section presents some of the evidence that showed a sense of belonging to a community.

8.2.2 Sense of community

'Group solidarity', 'cohesiveness', 'trust', 'safety', 'fun', 'exciting', 'supportive', 'inspiring' were just some of the terms that were used to describe the community by the participants themselves. McMillan and Chavis (1986) who are influential researchers on the concept of 'sense of community' define this concept as 'a feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared faith that members' needs will be met through their commitment to be together' (p.9). The themes that emerged from the data are discussed in the sections below?.

Concern for other community members

The mutual care that the participants displayed in this online community for each other was made apparent through interactions that showed intellectual or emotional empathy, through special attention and, at times, through a kind of solicitude. Feelings of concern for another member were exemplified when Janice was corrected for the wrong use of a word. Janice had used the word 'astrologers' in her message instead of 'astronomers' and the moderator wrote, '1 sincerely hope you meant "astronomers"'. Satwant, another member seemed to sense that this might be a discouraging remark for Janice and immediately came to show her support with the following message using both humour and understanding.

> 'She probably did. And if she didn't *stares at night sky*, [mystical voice\] Jupiter and Mars can be seen aligned through the cloudy and polluted London sky so I predict that you won't be mean to Janice.' (Satwant, A&S forum)

Community culture (warmth, trust, humour)

A sense of community was enhanced further as the participants were willing to both receive and respond by disclosing personal information, by joking about themselves, by challenging views respectfully and by adding to the knowledge base for the benefit of the community. On the Astronomy and Space forum, when Alex jokingly informed the other members about a competition,

> 'Finally, are people entering the ISSET competition? If not please don't; I have enough competition already!' (Alex, A&S)

ISSET (International Space School Educational Trust) is an organisation which sponsors student projects and competitions on space related topics. Louise responded by asking about the competition.

> 'Alex, what is this ISSET competition? I have not heard anything about it yet, but it might be interesting so can you let me know?' (Louise, A&S forum)

This seemed to indicate that the community was a place for finding further motivational projects to get involved in.

There was a feeling of ease and warmth that was communicated through humorous interchanges which used paralinguistic cues and emoticons (smiley faces, exclamation marks) to convey meaning. On completion of the book *Private Peaceful*, Belinda shared the scenario in the following way;

> 'I really loved Private Peaceful. I thought it was such a beautiful book **hand me a tissue!'** (Belinda, RG forum)

In another case, during a stressful revision period at school, Linda was feeling guilty about spending too much time on the forum and justified it by joking about it;

> 'Maybe not so sensible, seeing as my English lit. revision commenced only about 5 days ago, and I still haven't learnt any quotes from Of Mice and Men (I shall be relying on my Amazing Short Term Memory), but hey. I'm sure this discussion will stimulate my analytical mind, and that's got to come in useful tomorrow, right? ' (Linda, RG forum)

Then there were instances where members felt comfortable enough to joke about their own efforts at writing. For example, when Rik commended Amar for raising a good point in a debate, Amar showed his happiness in the following jovial manner.

> 'I made a good point? At last! Knew if I made enough points, one would be good eventually!' (Amar, E&P forum)

In the following instance, Rup had found someone's remark extremely funny.

> 'HaHaHaHaHaHaHaHaHaHaHaHaHaHaHaHa!!!! Oh, God, that is hilarious!' (Rup, E&P forum)

This touch of humour seemed to be one of the strengthening ingredients that helped to fabricate a healthy spirit or essence of community. There was always an air of an invitation to 'laugh with' each other rather than 'laugh at' anyone. The relationships between participants, between the tutor/mentor, which developed through mutual online participation seemed to add to a shared history (giftedness) and often led to shows of emotional attachment. Even when Joyce was away on a holiday she kept in touch and felt a responsibility to contribute to the community.

> 'Hey - sorry I didn't contribute but I am currently in la belle France. See you all when I get back. It's really annoying typing things here because the keyboards are all strange! Stupid French keyboards!' (Joyce, RG forum)

Interestingly, in her message Joyce said 'see you all', when in reality it would only be online, which seemed to imply the extent to which this community seemed 'real' for her.

There were other examples where members were logging in to post even on statutory holidays like Christmas and New Year when most people are busy with families and friends. It might be the case that the community was fulfilling a need to overcome loneliness or boredom too.

Community support

In addition to being a place where gifted learners could express their ambitions freely, the community also seemed to provide them with a place to express their interests and to get further guidance in their career. In the example below, George was one of the mentors/experts who had posted details about his expertise on his website and had invited the members to feel free to read them. This was in response to several inquiries about his background when the forum was started. It was apparent that the gifted learners felt that it was important to know that a qualified person was leading them.

> 'Hey everyone! FINALLY a subject I can talk about without feeling like I'm the only one who is fascinated about it! ...' I would like to ask George a question after reading his short biography (sorry if it sounds irrelevant): how did you become a physicist and what does it involve really? because I have been seriously considering it as a career in the future but I don't know anyone I can get some first hand opinion or information.' (Deep, A&S forum)

Some studies about why gifted children drop out of school have claimed that if these students had had even one person who was willing to show an interest in them and what they really wanted they would have continued in school (Schofield and Hotulainen, 2004). A community such as this could be one place where the needed mentoring support might be found.

Feelings of being supported by others in the community while also supporting them was further exemplified with the following exchanges. Eliza was getting frustrated while experiencing difficulty downloading some software which was needed to process images on the Astronomy and Space forum. She asked if anyone else had similar problems and whether someone could help her. Joe responded by sharing what worked for him.

> 'When I opened it, it came out as a script/code as well, and it wouldn't open in DS9 either, even if I did "Save Target As". So, I saved it as a .fits file as normal with the Save Target As and opened it up in IRIS. It worked! So I hope it works for you lot too! Hope it helps.' (Joe, A&S forum)

Eliza followed up on the suggestion and replied, 'It works for me in IRIS. Thanks Joe!' Then, when Maggie asked for help with her attachments, it was Eliza who came to her aid, 'Try converting the file to a JPEG.' This implied that Eliza had learnt how to download and convert the files and was now willing to guide another member, thus promoting feelings of integration and fulfilment of needs (McMillan and Chavis, 1986). Many other instances were observed in which this sort of help being asked for and provided was displayed..

Some characteristics that are claimed to be associated with giftedness, such as task commitment or persistence (Renzulli and Reis, 1997) or a high sensitivity to world affairs sometimes leading to feelings of hopelessness (Gross, 1998) were also displayed. For example, when David had a hard time getting started in an image

processing task because he was experiencing several technical problems, he did not give up, and persisted until he finally caught up with the rest. This was accomplished by asking for help whenever he got stuck. At one point he remarked; 'I'm getting better at this' almost as if to encourage himself. And when he got stuck he asked specific questions; 'The DDP only seems to blank out the image. What should I do?' With the help that was provided by various members he managed to complete the task.

This was also an example of how the community members were patiently scaffolding his efforts to learn. Another member, in a similar situation also continued to try, even though others had moved on, following at her own pace.

In a thread called 'When is violence justified?' in the Ethics and Philosophy forum, Kate became quite emotional and showed her feelings of hopelessness in the following manner.

> 'We can't ALL change TOGETHER that would mean people would have to decide HOW TO CHANGE, and as people would have different opinions, there would be disputes on how to change. disputes lead to conflict. conflict leads to violence. SO THERE YOU HAVE IT, FOLKS. VIOLENCE CREATED BY TRYING TO DEAL WITH VIOLENCE. OH, THE IRONY!!!!! (weeps for the futility of humanity's salvation).' (Kate, E&P forum)

Some characteristics of gifted learners, including persistence and worldliness, seemed to be accentuated in the online environment. It might be the case that the nature of these qualities get changed in the online space as these largely individual traits become more 'communal' through the community exchange.

Community responsibility and interest

There were also instances where members showed their interest in helping to improve the community. When Amanda made a suggestion about improving the

community website, it was encouraged by the moderator and he asked for further information: 'What do you mean by a decent website? Can you show me a link?' This sort of encouragement might suggest that members had a sense of having influence on and being influenced by the community (McMillan and Chavis, 1986).

Community motivation

There was sense of pleasure that was communicated through participatory messages that portrayed feelings of enjoyment, excitement, encouragement and motivation. The following exchange came after an hour-long live discussion which involved an intense synchronous chat about a book on the Reading Group forum with the tutor and six other participants. At the end of the discussion, the tutor first thanked everyone who had participated and then encouraged them by saying that the discussion had been enjoyable. She also felt comfortable enough to mention that she was 'tired' and 'frazzled'. This was as a result of having six people simultaneously making comments (talking at the same time) and her attempts to answer them all:

> 'Thanks so much, to all of you, for making this such a fun discussion. My brain's tired now. Quite frazzled.' (Christy, RG forum)

One of the participants reciprocated warmly by acknowledging her feelings of tiredness, 'I know what you mean!' and then revealed her own enjoyment at having participated;

> 'Phew, I know what you mean! It's crazy when there's so many people! Great, but crazy. Thanks!' (Joanna, RG forum)

In the message below Eleni seemed eager to collaborate with others. She also revealed her choice of music, which may imply an invitation for others with similar

taste to respond. Her interesting choice of words 'educational progress' gave an indication that she was really interested in her educational goals, but at the same time had other interests:

> 'I say we should start a new forum about doing a project together. So we can really start to make some educational progress. Pink Floyd rock!' (Elena, E&P)

Referring to an image, Rekha did not hesitate to compliment someone else's attempt at processing an image that everyone had been working on, 'I like your second one. It's great!' There were several instances which implied that getting community approval was important for some members; 'Ok, I have also done my image. Hope you all like it, and hope it works.' They also wanted to 'hear' other peoples' views.

> 'I hope everyone can follow this - it's a bit of a warm up for my PPE interview next week! I'd love to hear people's views.' (Ena, RG)

Bal modestly suggested to the community that even though her message might be a confused one, she hoped they would overlook her confusion and help her improve:

> 'Long and slightly garbled post, so apologies in advance. Not all of it may make sense, so please correct me where I'm going wrong.' (Bal, R&G forum)

The analysis of the messages in this study brought to light numerous exchanges that seemed to convey a strong sense of community among most of the participants. Feelings of belonging to a unique club, where the members could be trusted with the information posted, and that participation in this warm, friendly and supportive environment would be beneficial for their learning goals were prevalent. This finding supports Rovai's (2002a, 2002b) argument that a community can be

constitutively defined in terms of four components: spirit, trust, interaction and learning. I found all four components present in this community, but I found them constantly overlapping and interlinking. For example, in the act of disclosing personal information, making the decision to share private information, the participant already has the impression that she can trust the others, and in the spirit of the community (warm, friendly, humorous, gentle, respectful, trustworthy) she is showing her willingness to interact with them. The resulting exchanges may lead to the participant learning from the others' experiences.

Feelings of membership, spirit or belonging through bonding and friendship, influence, trustworthy and reliable exchange of support and emotional connections among members existed to varying degrees in this online community. Several researchers have reported evidence of a 'sense of community' in virtual communities and its importance to learning (Kollock and Smith, 1996; McLaughlin *et al.* 1995; Rheingold, 1993; Rovai, 2002a; Wegerif, 1998). Rovai (2002b) found no significant difference in the feelings of community experienced by students on asynchronous learning networks compared with the traditional courses.

Learners in communities with a sense of camaraderie and a feeling of involvement tend to learn not only by themselves, but from each other and from the instructors; they learn the processes involved in thinking. This idea is supported by Rowntree (1995), who writes, 'What they learn, of course, is not so much product (e.g., information) as process – in particular the creative cognitive process of offering up ideas, having them criticised or expanded on, and getting the chance to reshape them (or abandon them) in the light of peer discussion' (p.207).

8.2.3 Sources of tension and conflict within the community

In spite of all the positive feelings of belonging to a community portrayed by the online exchanges, there were a relatively small number of members who felt alienated from the community. These feelings were discussed earlier in relation to the responses from the online questionnaire. The following sections outline the three sources that exhibited some tension and conflict within the community.

Intimidation

Some of the exchanges seemed to indicate that the 'sense of audience' the online community offered was both a bonus and a deterrent. On the one hand, it was a non-judgemental risk-free environment which provided encouragement that could lead to a higher sense of self-confidence.

> 'It is good to get messages that agree with/add to my opinion or compliment something like my poetry too.' (Fauzia, GD forum)

On the other hand, the awareness of writing for a large audience, the high standards of some messages and leaving a permanent record of what they have written were among some of the reasons that made it intimidating. This was true only for a relatively small number of the participants. The online questionnaire revealed that 15 per cent of the respondents were intimidated by the large audience. One of the participants commented:

> 'I don't feel as intelligent as the others and I don't want to say anything that may seem silly.' (Suleman, Q)

There were some other underlying factors that might have contributed to the feelings of intimidation; power and control issues and the increasing membership of NAGTY. These factors are discussed below.

Power and control issues

As was discussed earlier (p. 225-227) there was some indication of power and control issues where a few members tended to take over the discussions. There were a few incidences where a few members seemed to be controlling the flow of the conversation. This was listed as one of the inhibitors for posting messages by the online questionnaire respondents, who sometimes felt excluded.

> 'Often a group of people are posting on a topic who all know each other, and the overall effect can be quite "cliquey", excluding those not in the group.'
> (Stephan, Q)

Perceptions of the community being too 'closely knit' inhibited others but this was not seen as a major problem by most participants.

> 'there is a very close-nit (sic) community between daily users and they are not very accepting/ embracing to new or less frequent users which is extremely off-putting.' (Georgia, Q)

On the contrary, it was observed that there were several examples where newcomers were welcomed but they had to 'show' themselves' first. Since this community was based purely on voluntary participation and interest, incentives such as better grades could not be offered for posting messages. As a result some of the members did not feel the necessity to participate through posting messages and remained 'hidden' or 'silent'. The onus on becoming part of the community depends on the individual and how they represent themselves and participate.

> 'I find that it is difficult to establish yourself within the discussion forums as part of the community.' (Joel, Q)

Ephemeral nature of the forums

There seemed to be a growing tension between the community membership related to several factors that were linked to the transitory nature of the forums. Primarily the burgeoning size of the NAGTY membership was perceived as being problematic. As mentioned earlier the membership of the community had been growing steadily and was close to approximately 160,000 members by August 2007. Some members commented in the 'Any other comments' section of the questionnaire that the escalating number of members, shortage of staff and the high number of messages being posted made them feel 'insignificant' and made them lose their motivation to participate.

> 'Some of the forums hold too many members and not enough staff. I understand that there are many members of NAGTY, but the size can sometimes make you feel insignificant and demotivate you.'
>
> (Mandy, Q)

Some members also felt that they were too old to be participating, as they sensed a larger number of younger participants.

> 'I find that the sheer volume of messages discourages me from being more active. I also feel a little isolated in the writing forum as being older than many of the members (as far as I know), which had led to my being very inactive there.'
>
> (Bob, Q)

It is only natural that when the community has served its purpose a time comes for the members to move on. For some it comes quicker than others. This might be related to the age they join and their level of maturity. In the example below, Freddy first mentioned that he had 'grown out of the forums', and then he admitted that he still participated but only occasionally, when the need arose. He said, 'I use them if I need to …' showing that there was still something that the community could help him

with. Then he said 'but not because I want to', which might mean that he was not interested in communicating for any other purpose than forging friendships.

> 'I feel I've grown out of the forums. I'm getting too old and although I still speak to forummers,(sic) I don't tend to use the forums much any more. I use them if I need to but not because I want to. Having said that, six months ago I'd have said the complete opposite and it's unquestionable that the forums have helped me immensely.' (Kirk, Q)

Helen in the message below sheds light on three other possible reasons for her non-participation. She admitted that although she was an active participant, she stopped for three reasons. The first reason was that one of her messages was rejected. This might have led her to become discouraged. The second reason was that she found too many repetitive messages and lastly she felt that her friends had moved on.

> 'I used to post frequently but I stopped about a year ago because one of my posts was rejected and I realised that so many new people kept joining and I had nothing much left in common with them and the same repetitive discussions were wasting bandwidth. Most of the people I used to talk to don't come on anymore.' (Helen, Q)

8.2.4 Student perceptions about community and membership

The findings from the qualitative data analysis were supported by those from the questionnaire. When participants were asked how they felt about their community (Table 29 on the next page), 64 per cent of them felt that there was 'quite a bit' or 'very much' a cooperative sense of learning within the forums. Of the respondents, 77 per cent found that the atmosphere was 'quite a bit' or 'very friendly' and 84 per cent of the members said that they liked the opportunity to view and share their opinions with other gifted and talented students either 'quite a bit 'or 'very much'. Similarly 89 per cent said that they were proud to be members of the gifted community. This suggests that the gifted and talented identity is valued by the

members. It may not be possible for most of these participants to form this identity outside of the community.

Surprisingly, even though there was a strong positive response about the collaborative friendly atmosphere of the community, only 43 per cent of the members said that they felt that they belonged to a community 'quite a bit' or 'very much, and 45 per cent did not feel as strongly. The conflicting results may have been a result of the nature of the questions as the online exchanges showed a strong sense of community. Jones (1995) notes that, on one hand, a text-based environment can appear to foster a sense of community among its users but, on the other hand, it personifies the impersonal communication of the computer and of the written word.

Community/Membership: Please choose one option from each row which indicates the extent to which each of the following statements apply to you

1. Sense of community	Not at all	Somewhat	Quite a bit	Very much	Response Average
A. I feel like I belong to a community	12% (35)	**45% (131)**	26% (76)	17% (50)	**2.48**
B. There is a cooperative sense of learning within the forums	4% (12)	32% (93)	**46% (133)**	18% (52)	**2.78**
C. I find the forum atmosphere to be friendly and approachable	2% (5)	21% (61)	**46% (135)**	31% (90)	**3.07**
D. I can get get help from the community members if i need it	9% (26)	**35% (101)**	35% (100)	21% (62)	**2.69**
E. There is a lack of communication between the community members	**45% (130)**	40% (115)	11% (32)	3% (10)	**1.73**
F. Whenever I find something new about the topic we are discussing I share it with other community members	21% (60)	**42% (122)**	28% (81)	9% (27)	**2.26**
G. I like the opportunity to view and share opinions of other gifted and talented students	3% (8)	13% (38)	40% (116)	**44% (129)**	**3.26**
H. I am proud to be a member of the gifted community	3% (9)	8% (24)	25% (73)	**64% (185)**	**3.49**
I. When someone asks for help I ignore it even if I know the answer to their question	**69% (201)**	26% (74)	4% (13)	1% (2)	**1.37**

Table 29: Questions on community/membership

While 95 per cent of the respondents said that they would not ignore someone if they needed any help, 46 per cent felt that they could get help from the community

and 63 per cent of the members said that they did not necessarily share new information with the others.

The comments below, taken from the open-ended comments section on the online questionnaires, express the appreciation and gratitude felt by some of the respondents for the community and how it had helped them through 'tough times' by being 'supportive, encouraging' and a 'close community'.

> 'These forums really helped me through some 'tough' times, and I really felt that it was a supportive, encouraging, and close community - the best thing I've done in my life was filling in the application forms for NAGTY.'
>
> Sara, Q)

The participant below is referring to the online discussion forums.

> 'I think they are a very good opportunity to learn and expand general knowledge within a community.' (Leo, Q)

The observation that the community was seen as having a friendly and respectful environment was confirmed by the respondents of the questionnaire.

> 'I've made some lasting friendships through the forums.' (Elka, Q)
>
> 'The forums are amazing, if a little crazy, and I've made great friends there.'
>
> Sam, Q)
>
> 'very respectful atmosphere despite greatly different viewpoints, e.g. "I appreciate your Point of view but...'''' (Linda, Q)

There was also confirmation that the members were grateful to have like-minded peers that they could relate to:

> 'I find it very helpful when non-tutors (i.e. other NAGTY members) choose to help answer my questions, as I know the answer has come from someone who I can relate to.' (Simran, Q)

Suggestions made earlier about how the community could offer these gifted learners a chance to be more like their true selves or identify more with their giftedness also seemed to be validated by the following comments.

'The forums make you feel accepted where otherwise you are somewhat of a social misfit, for example in school, and this gives valuable confidence.'
(Nina, Q)

'I think the forums are brilliant because they give me a chance to look at what I want in more detail than in school and I can find other people on there who enjoy the same things as me without feeling like a geek.' (Jake, Q)

The above section presented some data from the questionnaire that appeared to confirm the findings from the qualitative data. On a similar note, the section below presents some data from the focus group meeting with the tutors in which perceptions about the communities that were built from the text analysis and the questionnaire again seemed to be validated.

8.2.5 Tutor perceptions about community and membership

A focus group meeting (FGM) with online tutors revealed that although they perceived a sense of community it was quite unstable and was dependent on the 'current' members. They felt that this 'sense' was inconsistent because the dynamics kept changing.

'cos we have different members at core points and its weird kind of feeling when you are running a summer school. **You** are the consistent element and everybody else kind of chops and changes.' (Tutor, FGM)

'And so when I say 'community sense', yes! In a way it's a very abstract community and also the ... I think ... only reason I have a sense of community at all is because I run it as a community.' (Tutor, FGM)

The tutors also felt that when the community was in its embryonic stages there was a greater sense of community but the burgeoning membership had had a negative impact.

'Depending on who the core posters are and they obviously change. Depending on age. On what they are doing or whether at school ... the reading groups are very quiet, they become a very strained community, that's dialogic ... that's not personal ... completely! So at the beginning of the first year, as I said, - very

much a part of a community. That's how it seemed, but I think that it's faded and I think that's something I want and that's the way I see my role. But I think that's something the other students may be seeing less, which is why I emailed all of them and kind of gave them mission statements saying: you are part of a community of readers, you are responsible to work through everything together and to be as chatty as possible.' (Tutor, FGM)

When the forums first started the moderators felt quite close and became attached to their members. They felt part of the clique of that particular time, almost like a 'mate' but as a result felt quite devastated when time came for them to move on. It was also felt that this feeling had changed. Now, it was more of a top-down but friendly sort of a relationship where the moderators felt very protective and responsible for the members of their forum. Also, in the absence of core posters at various times during the forum there were too many new members which made it difficult to get a sense of knowing everyone well. In forums where there were regular posters the feeling of closeness was more prevalent. The moderators were able to visualise progression only when there was continuity. When the members were too many there was less sense of the whole group because the numbers were just too large and diffuse. As one tutor commented,

'because I think the community has disintegrated somewhat because of the extent of the new members.' (Tutor, FGM)

8.2.6 Summary of the relational dimension of participation

In summarising all the perceptions (researcher, students, tutors) it appears that this group of socially interdependent gifted learners participate in a culture of 'giftedness' that both defines the community and nurtures it. In a manner similar to Multi User Domain (MUD) users who end up developing systems of 'symbolism and textual significance' in order to allow them to identify with others in an environment which is lacking in traditional social-context cues (Reid 1995 as cited in

Gunawardena, 1995), the gifted learners also seemed to have developed some rules of engagement, such as language, tone and style of exchange.

The strong sense of community that emerged seemed to indicate that participants were identifying with other gifted learners such that their need to be in the company of other like-minded colleagues was being fulfilled at a social level. Here they could feel free to exhibit behaviours generally associated with gifted and talented learners and not feel afraid of being labelled. Generally, feelings of connectedness, cohesion and bonding that suggested that the learners enjoyed the company of the others and looked forward to time spent together were prevalent. Several researchers (Bullen, 1998; Conrad and Kanuka, 1999; Gunawardena and Zittle, 1997) place the creation of community foremost as a positive contributing factor for learning.

The above section explored how participation was realised in this community through social interaction. Some factors that were possible causes of tension within the community (power and control issues, increasing membership) were identified. In order to substantiate the findings from the qualitative analysis, data from other sources (the online questionnaire and focus group meetings with the tutors) were presented. These data confirmed the findings thus adding to the trustworthiness of the study.

The proposed analysis of the cognitive dimension made it possible to identify the skills linked to critical reasoning and then to evaluate the level of information processing applied by learners in each of the skills. The following section looks at participation through a conceptual dimensional lens to determine the level of higher order thinking skills the learners got a chance to develop as they constructed meaning through 'collaborative, authentic, purposive activities' (Wilson, 2001).

8.3 The conceptual dimension of participation in a community of inquiry

The conceptual dimension refers to the varying ability of learners to construct knowledge. The categories in this dimension were introduced in the theoretical framework (See p.154-157) as being knowledge exploration, comprehension, application, analysis, synthesis and evaluation; categories which help to establish the stage reached in the cyclic process of an inquiry (Figure 2 on p.132).

Henri and Pudelko (2002) maintain that participation in a community life provides the foundations for learning and identity construction processes. It is claimed that higher order thinking is a cumulative process of both the private world (internal activities such as reflection) and the shared world (external activities such as verbal engagement with the others) (Anderson and Garrison, 1995; McKendree *et al.* 1998). The stimuli needed for higher order thinking processes appear to be products of the social, participatory and shared verbal activity in online environments (McLoughlin and Luca, 2000). Mercer (2000) contends that communities of inquiry enable members to achieve more than any of them could achieve individually; language as a tool provides the learners with a chance to 'think together' and collectively create knowledge and understanding. Johnson and Johnson (1996) also see collaborative processes such as these as being cognitively beneficial.

The sections below explore the various types of knowledge-creating processes, beginning with the fundamental exploratory stage and progressing to the more advanced stages. This is done by looking at instances that show evidence of participants exploring knowledge (Section 8.3.1), showing comprehension and application (Section 8.3.2) and demonstrating analytical skills along with the ability to

synthesise and evaluate the knowledge (Section 8.3.3). This is followed by a summary (Section 8.3.4) of looking at participation through the conceptual dimension.

8.3.1 Knowledge exploration

Along with all the 'receiving and responding' types of social interactions in which the members disclosed information about themselves, exchanges were also observed that showed knowledge-building explorations. As explained earlier in this study using the practical inquiry model (Dewey, 1933), the process of exploration usually began with a triggering event which produced curiosity to know more, or a state of dissonance as a learner encountered a new problem. This resulted in the participants asking both general and topical questions leading to an initial information-exchange period during which general facts were added to the knowledge base of the community. In some cases the information was in response to someone's question, and in others it was simply volunteered.

In the Astronomy and Space forum, when the topic of 'Black Holes'[5] (the triggering event) was introduced by the tutor Richard, Bob showed both his excitement at wanting to know more and also shared what he had already discovered about the topic (message appears on the next page). It might be the case that Bob, in giving all this information, was not only helping to build the knowledge base for the community but also establishing an identity which shows his dedication, generosity and willingness to receive and respond.

[5] All quotations in this section will be presented in a boxed area as they are quite long. It is necessary to quote them in their entirety as they show the skills involved and the extent to which the gifted learners show their enthusiasm, dedication, use of extensive vocabulary and knowledge from other sources.

'Hey Richard, nice introduction to black holes. I heard that there was a black hole at the centre of our galaxy, so I went off Googling and found some really interesting information about it as well as some pictures and even a movie showing it.

Apparently, the black hole (named Sagittarius A*) isn't just any old Black Hole, it's a super-massive black hole with a (conservative) mass of over 2 million times the mass of our own Sun! Now that's big! In fact, going by the data posted above, that makes it 6, 000, 000 km's wide! However, it could be bigger as obviously it's [sic] actual mass is uncertain. I found one page referencing it as 4 million times the mass of the Sun!

The pages I turned up whilst searching are below:
Galactic Center Research <http://www.mpe.mpg.de/ir/GC/index.php>
NASA APOD Oct 18th '02
<http://antwrp.gsfc.nasa.gov/apod/ap021018.html>
Chandra - Sagittarius A*
<http://chandra.harvard.edu/photo/2003/0203long/>
Space.com - New Twists on the Milky Way's Big Black Hole
<http://www.space.com/scienceastronomy/mystery_monday_031124.html>

And finally, I found an article that suggests that there might actually be a second black hole at the centre of the galaxy. Link
http://www.newscientist.com/article.ns?id=dn3847.'

(Bob, A&S forum)

Similarly, in a debate in the Ethics and Philosophy forum, where the topic being discussed was 'Should the government be able to regulate the reproduction of the species?', the discussion was led towards the belief that this type of population regulation was already happening in China. In order to add to the discussion, Joanna took the time to find some statistics about children and male/female ratios in China from the CIA *World Fact book*. She then shared this information with the others.

'Sex ratio: At birth: 1.12 male(s)/female; Under 15 years: 1.13 male(s)/female;15-64 years:1.06 male(s)/female; 65 years and over: 0.91 male(s)/female; Total population: 1.06 male(s)/female (2005 est.); Total fertility rate:1.72 children born/woman (2005 est.)'

(Joanna, E&P forum)

It was not certain whether this information helped the discussion at all, but the gesture of looking up the information showed engagement with the others and a desire to learn more about what was being discussed and perhaps impress the others.

In the same discussion thread, another participant, Jenny, added a message that typified the extent of engagement by some learners. Her use of the words 'I thought I heard someone …' seemed to indicate total involvement in a conversation:

> 'I thought I heard someone basically saying that while it would not be alright for the government to control the population here, it might be admissible else where, the argument being that we have the wealth and resources to support our increasing population here but other countries are not in the same situation.
> **Not afraid to present unconventional ideas.'**
>
> (Jenny, E&P forum)

This may also be seen as an effort to draw attention of the participants to relevant points in this combined endeavour to make meaning out of a situation (Mercer, 2000). Jenny seemed to be bringing up the points again to bring back the focus of the argument about whether the government should be able to regulate the reproduction of the species. This showed her sense of values; awareness about not having separate rules for different countries about population control. Then she exhibited her resolve and determination to want to stand up for these types of values by signing off with the phrase '**Not afraid to present unconventional ideas'**, and emphasised this by using a 'bold' font.

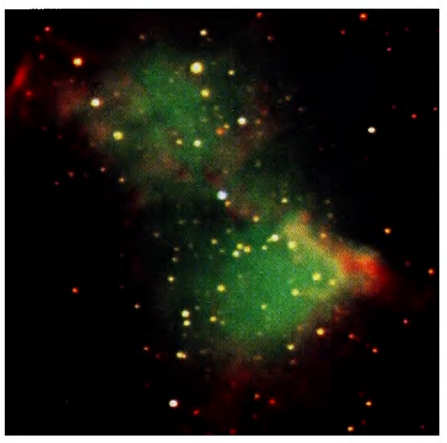
8.3.2 Comprehension and application

Some participatory interchanges showed that the learners were in the process of constructing new knowledge when they were following instructions and producing something new. This was most evident in the 'Image Processing' thread in the

Astronomy and Space forum. In the message below the tutor set a task where the learners first had to download the 'TIFF files' which he said were made from the 'FITS file'. Next the participants had to produce their own 'red, green and blue' image(s) from the 'FITS file'. The tutor explained that the objective was to learn how to go about processing images from a professional telescope. Astronomical images used by professional astronomers and serious amateurs were usually in a special format called a FITS file (FITS = Flexible Image Transport System). Basically a FITS file was the raw data from the telescope camera and could be quite confusing and thus had to be converted to a JPEG or TIFFS file.

> 'The TIFF files you were given to make colour images from were made from FITS files and processed to bring out the faint image. Now it is your turn to get the faint image from the FITS files and make your own red, green and blue TIFF files to then make your own colour image from FITS files …' (Tutor, A&S forum)

The participants experimented on their own at their own pace and eventually started to post their images. The images below show the varied results obtained.





Starting from the first stage (Knowledge exploration) the learners progressed through to the third stage and presumably they did Stage 3 too? (Application) as they applied their knowledge skills to understand and grasp the meaning (Comprehension) before using this to produce a new product. The following images were the various

attempts to obtain the image of the Crab Nebula by one participant. He was trying to improve his image at each attempt.



Not everyone was able to produce the image the very first time at their first attempt but whenever they got stuck they asked for help and were assisted through the process by either the tutor or the other members. The enthusiasm exhibited by the participants was not hampered by the several technical problems some of them experienced. Towards the end of the month, when the topic was about to change, the moderator asked if anyone was interested in more image files. There were several grateful responses to this offer because it appeared some members would have liked to spend more time processing images, although time and school work constraints had not allowed them to do so.

> 'Thanks. I'm at school now, so I can't do any image processing at present, but I'll remember them when I get home.' (Barbara, A&S forum)
>
> 'Thanks very much, I will have lots of fun with this. My GIMP broke for a while but I've fixed it now!' (Jonas, A&S forum)
>
> 'I would, please, as I will finish my exams soon and so have more time.' (Sean, A&S forum)

The Application stage was also exhibited when learners co-constructed knowledge by a process which involved systematic negotiation. Some of the questions that were asked were quite shallow and were more conducive to fact

learning than the kind of learning that involves the construction of meaning through both analysing ideas and integrating them. However, there were many incidences, especially in the Ethics and Philosophy forum, where it was possible to detect that the participants were engaged in higher order thinking processes. This was revealed by cognitively productive exchanges which portrayed the application of processes such as the making of statements and counter- statements, defending and challenging each other's views, and negotiating solutions to dilemmas. In applying these processes, they were making use of learning skills that required them to analyse and synthesise information. They were arguing and systematically pointing out areas of agreement and disagreement, generalising, hypothesising and bringing together information already learnt from other sources to prove their own point or to challenge someone else's. In a couple of cases, the thinking processes reached the evaluative stages where the learners were able to criticise, judge and offer alternative solutions.

An example of how the learners thought critically, analysed and synthesised whatever information was available was Georgina, who expressed her own views only after she had had a chance to examine what other participants and resources had already said about the topic " Is Violence ever justified?'. After she had expressed her opinion, she added the following comment which showed her confidence and the willingness to accept the views of others.

> 'Hope I didn't offend anybody ? though I'm glad if what I say makes you think again about things. I hold fairly strong views ? but I feel this is justifiable because I have thought a lot about some of these subjects, have read fairly widely about them, and most importantly, subject my thoughts to regular criticism. If somebody presents an alternative theory which I feel is more likely to be true, I will certainly accept it. ' (Georgina, E&P forum)

In order to substantiate the above claims, I would like to utilise the concept of an ongoing cyclic thinking process outlined by the practical inquiry model (Dewey, 1933). This model was used in the Community of inquiry model (please see p.126) to illustrate the processes involved in higher order thinking, as the participants construct knowledge by oscillating between their private (reflective) world and the shared world. The example (Stages 1-4) comes from a previously mentioned discussion thread about whether or not the moon landings are faked. Even though there were many participants, I just chose a few that I thought best represented the exchanges and could also portray the different stages in the practical inquiry model.

The first stage, according to the model, begins with a triggering event which, in turn, begins the exploratory exchanges shown on the next page. When the tutor introduced the triggering question in the shared world, three participants (Paul, Tom and Dan) began the exploration by giving their own opinions which were probably based primarily either on what they already knew or what they had researched and reflected upon in their own world. Paul seemed to have thought out everything quite precisely and gave the reasons why he did not believe in the hoax theories. He presented everything in a very orderly manner using words like 'Firstly', 'Secondly', 'Furthermore' and 'Thirdly'. Both Dan and Tom were less structured. Dan said he thought a telescope might solve the problem in this age of superior technology. He believed that such a device would resolve this issue once and for all if it was 'pointed towards the moon' so we could see 'the remains of the moon crafts'. Tom believed that the conspiracy theories arose from a lack of answers and not a lack of truth and tried to justify this statement. These messages represented awareness and perception of each individual's meaning for the concept brought forward into the shared world.

Stage 1: The Triggering Events:

Tutor:

'So this month's topic for discussion is this … .Did the USA really go to the Moon or did they fake the landings to save their reputation?

Paul:

There are several reasons why I don't believe the moon hoax theories.

Firstly, pretty much every argument that has been put forward for why the landings must have been faked (based on supposed discrepancies in video footage, the supposed inadequacy of 1960s technology, etc.) has been demolished…

Secondly, at the time NASA was employing something like half a million people! Keeping all of them quiet …

Furthermore, the Apollo 11 capsule was traced to the Moon by the Russians and also observers …

Thirdly, the astronauts brought back moon rocks, whose composition (as far as I know) was quite different from anything found on Earth. The following website has some interesting information about this topic http://www.badastronomy.com/bad/tv/foxapollo.html

Dan:

Well, if we disregard any of the speculation out there, and actually point a telescope at the moon,
we should see the parts of each craft that were left on the moon, along with footprints.

These days in which we can use telescopes to look deep into other galaxies, it would be really simple to turn one towards the moon and settle this once and for all.

Tom:

I don't think that the Americans would have faked the moon landings. I think that the conspiracy theories arise from a lack of answers - not a lack of truth. The American government is ….

In the second stage of the model shown on the next page, integration of ideas usually takes place. This is shown by Samantha's comment in which she indicated that 'before looking at this' she was quite sure that the moon landings were real. However, she said that she had begun to doubt this belief and after doing further research on her own she had now come to a different conclusion; 'compelling evidence' had 'convinced' her that the landings were indeed fake. She then invited the others to see the same websites. Meanwhile Paul presented a counter-argument to Dan's suggestion of the telescope and why this evidence would be considered not satisfactory by most sceptics. Another participant, John, who seemed to have been following the argument and reflected upon it, said that he agreed with Paul to a certain extent but was still not quite convinced because of all the 'compelling' evidence to prove that the landings were fake, although he was still 'reluctant to accept that' the

Americans would take such a 'big gamble'. Then he admitted that 'he just didn't know'.

Stage 2: Integration of Ideas

Samantha:

> Before looking to this I was quite sure that the moon landings were real. I mean I had heard out how they could be fake but I just dismissed them as conspiracy theory's blown out of proportion. However after reading some websites there is some compelling evidence that the moon landings were fake. But after a Google search on 'were the moon landing fake' the first result link<http://pirlwww.lpl.arizona.edu/%7Ejscotti/NOT_faked/> I am now utterly convinced that they did happen. This website disproves every argument I have ever heard very well. Read it and see what you think.

John:

> There was a lot of pressure on the Americans to succeed in the Space Race at the time, especially after the Soviet's launched a man into space. But whether they would go as far to fake it, I'm not so sure…
>
> The evidence out there is very compelling though, although I think it should be taken with a lot of salt. After all, people can pick holes in most things …
>
> I guess what I've just spent the last 5 minutes trying to say, is that I don't know!
>
> There is some fairly compelling evidence to suggest it is a fake, but at the same time, I'm reluctant to accept that they'd take such a big gamble.

Paul (answered Dan)

> For one thing, a lot of the telescopes are owned by NASA. Somehow I can't see evidence from a NAS -controlled telescope being very convincing to the sceptics! Also, some of the landing sites may not be in positions that are easily visible from Earth or from orbit around the Earth.
>
> And just because the telescopes can see large, distant objects (i.e. other galaxies), I'm not sure that that necessarily means they can also see small, nearby things (e.g. footprints on the Moon). I don't know if our telescopes are designed to focus in on things like that.

John: (addressed another point raised by Paul)

> But they couldn't send stuff to Mars back in 1969.

In another message, Paul addressed two other points raised during the discussion about why the USA flag was not flapping as a result of wind, and he asserted that as far as 'he knows' it was the Americans not the Russian who had landed on the moon. The next stage is shown in the exchange that continued, which shows a combination of the inner and the outer world - Reflection/Resolution of ideas. Martin agreed with John and also admitted his confusion. He said what 'baffles him' is that 'the case against is very simple and conforms to the laws of

physics'. This suggested that he was using some pre-constructed knowledge to bring things into focus, reflecting and then coming back to the discussions. He raised three points as counter-arguments. These points were addressed, one by one, by Paul. He used the auto-reply feature of the software to address each point that he believed he had an answer for. There seemed to be some resolution for John, who earlier on had admitted that he 'didn't know', said that he 'now believes' that he had found evidence.

Stage 3: Reflection/Resolution of Ideas

Martin:

> No one will ever know whether or not they faked the pictures, but my opinion gets swayed when I hear the evidence for both sides. What baffles me is that the case against is very simple and conforms to the laws of physics, whereas NASA's explanations seem very long-winded and a little suspect to say the least. However …
>
> One last point, why was it announced this year that it would take America a long time to get to the moon, 2020 was the target data.

Paul:

> What baffles me is that the case against is very simple and conforms to the laws of physics ... I disagree with that statement. If you actually think about the arguments, you see that they don't tie in with the evidence .e.g. Hoaxists often claim … The argument just doesn't work … The real explanation for what I described above is just that perspective causes distortions .
>
> ... whereas NASA's explanations seem very long-winded and a little suspect to say the least
>
> Well, things are usually more complicated than they might first appear. Just because an explanation is complex it doesn't reduce its validity.
>
> why was it announced this year that it would take America a long time to get to the moon, 2020 was the target date.
>
> NASA doesn't get the funding it used to in the 1960s (at least as a percentage of US GDP - the actual figure is probably larger now due to inflation etc.) - there is no longer a race to get into space …

At this moment, for those participants (Samantha and Linda) who seem to have resolved some of the issue in their minds, two new triggering events came into the picture (Stage 4). The first trigger was Linda's question, 'Has anyone had been watching Space Cadets?' Linda had not commented earlier, but seemed to have been following the discussion as was shown by Joe's answer to her trigger.

Stage 4: Resolution/New Triggering Events New cycle begins again

Linda:

Has anyone been watching Space Cadets?

Joe:

Yeah, Space Cadets got me thinking too, but there it's the "astronauts" who are being fooled. I don't think anyone who knew enough to even look like they knew what they were talking about would be fooled by any set up remotely close to Space Cadets.

Samantha:

I have also found out that a mirror was placed on the moon surface. A laser pulse fired at this returns to earth. This has been independently tested. This must show that at least one of the moon landings were real.

Tutor:

Maybe it was put their by an unmanned mission? A few unmanned missions went up there also.

Joe remarked that it got him 'thinking too' which revealed reflection and integration of ideas being discussed. He said that in the Space Cadets it was the 'astronauts' that had been fooled which created a link between the moon landings being faked. Samantha who had contributed earlier to the argument now said that she had 'found out that a mirror had been placed on the moon', which 'reflects back laser impulses that have been tested'. The answer to this was provided by the tutor who said that 'maybe it was put there by an unmanned mission'. At this point the discussion took a different turn the new triggers mentioned above, thus starting the whole cyclic process once again.

There were many other interactions that elucidated the fact that the views of the some participants were affecting the ideas of others.

'Tricky stuff, I'll come back to this later when I've read other people's ideas.'
(Joanna, RG)

'I think I'm beginning to see it now... Is it that because the brain patterns cannot be predicted they aren't subject to determinism? If this is the case though, what is the agent which carries out the conscious choice?'
(Mike, E&P)

In another incident, Rick, for example, wanted to re-evaluate the existing phenomenon of gravity. He solicited help from both the moderator and the community members. He posted five messages in a row that evening between 8.15 and 8.41pm. Two are given below to show how he tried to draw the others into a discussion in different ways.

> 'Can I interest you in saying that gravity as we know it is wrong? I have been thinking for a while and need an expert's opinion.'
>
> (Rick, A&S Forum)
>
> 'Hypothetically, what would happen if gravity was disproved by someone?'
>
> (Rick, A&S Forum)

Rick seemed to believe that 'gravity as we know it is wrong', so wanted to contest the idea with an expert. The first message was addressed to the tutor. Then, in the next message as if to nudge on the provocation, he asked what would happen if someone were to disprove the notion of gravity as it was known presently. It might be the case that he was thinking of himself as he makes this point.

He was given direction by Jamey, another participant, who told him that this kind of disputation was quite common in the scientific community and referred him to the theory of the 'Paradigm Shift' in Simon Singh's book called *Big Bang*. Jamey revealed his knowledge from other sources and applied it to this situation.

> 'I expect it'd just be like other times when theories have been proved wrong - the scientific community would probably reject it at first until it had been proven over and over again by independent people. Then it would gradually be accepted. New models have to prove themselves to be more accurate than the current models before they are accepted though. Simon Singh goes into the idea of Paradigm Shifts (as he calls them) in his book Big Bang. I'd recommend reading it.'
>
> (Jamey, A&S forum)

The tutor eventually also answered Rick but not directly. Instead, he asked leading questions that would encourage Rick to form his own opinions or question his own questions. This example might also be interpreted as a situation in which the learner was shown how to develop some higher order critical thinking skills. There was a perceived sense of scaffolding taking place. According to Mercer (2000), the learners use language to 'build a relationship between what has been said, and what is to come and we use resources of past experiences to make new, joint knowledge and understanding' (p.46). This he contends is realised through conflict, debate, argument and collaboration.

8.3.3 Analysis, synthesis and evaluation

Rather than just using simple constructions learners were observed trying to push their language to express their full feelings on a matter. It was apparent by the frequent use of the words 'I think … because', 'In my opinion …', 'The reason why I say this is …' that it was quite likely that the learners had thought-out reasons for their views.

The analytical skills shown by Sara in the Reading Forum exemplify this as she logically examined the actions behind some relationships between characters in *Far from the Madding Crowd*:

'Could this help to explain why Bathsheba's relationship with Troy wasn't very successful? Although, why does she fancy him so much and not Gabriel?

I think it's certainly the reason Hardy portrays as the failure of Bathsheba's relationship with Troy. As for why she fancies Troy more than Gabriel at first is clear; Troy is good looking, dashing, obviously a womaniser and can flick a sword around in an impressive way. In comparison, Gabriel is rather dull and steady which makes for the better relationship but isn't so interesting. A large part of the reason for Bathsheba's initial attraction to Troy is lust which she interprets as love.

And as an afterthought …
Compare Bathsheba's first meeting with the two men. She barely notices Gabriel who is described along the lines of being exactly in between handsome and ugly and passes over him indifferently. Yet with Troy their first meeting arouses so much interest on the part of Bathsheba that she enquires after him to Liddy. What's also interesting to note is that Bathsheba's vanity, a characteristic that Gabriel detects from the onset, plays right into the hands of Troy who almost instantaneously comments on her beauty thereby catching her attention (and causing Boldwood to lose out as he's never told her she's beautiful). Gabriel on the other hand is not afraid to criticise or speak openly to her.'

(Sara, RG forum)

The response from the tutor can be seen to be probing Sara with additional thoughts and questions for a deeper analysis.

'It certainly does seem as though we're meant to compare Bathsheba's suitors and review their "suitability" for her. Were you glad that she got together with Gabriel in the end or does it mark the end of her independence? May be we ought to think a bit about fate. You say that Bathsheba's vanity means that she "plays right into the hands of Troy". Does she have control over her actions or do circumstances (and other characters) conspire against her? I mean, does she herself bring about all the misfortune amongst the characters or does it just kind of "happen"? And what about Fanny? When Gabriel first meets her he feels her hand which is described "beating with a throb of tragic intensity" (Ch. 7). Does Fanny have any control over her life? Or could she be seen as the novel's ultimate victim?'

(Tutor, RG forum)

Sara wrote the response shown on the next page for her first comment. It was interesting to note (in the last paragraph) that she acknowledged that she had not been thinking very analytically before. In the last paragraph, she said that the message had

taken her a long time to write, and as she had run out of time to answer the other comments. She then promised to come back to them later.

This was an example of just one of many messages (very long expressive ones) that seemed to indicate that the forums were giving the gifted learners a chance to learn to develop analytical skills.

> 'That's very interesting … Throughout the book Bathsheba has been Gabriel's recognised master both socially and practically although Gabriel could arguably be described as being Bathsheba's mental superior; certainly he is a lot more mature. That's the conflict; the reader recognises Gabriel as the master (unless of course you bring a feminist slant to it) but the society in which the characters live view … as the question suggests.
> That's enough to cause any feminist to burn her bra and I can only just get away with saying it because I'm female! However, that is only cold logic; the reader has to bring the character of Gabriel to the situation. Of course, at the time, Bathsheba would have lost a certain degree of independence but I would want to argue that … likelihood be happier for it. Any relationship will limit total independence in a commitment to the other person but confident that Bathsheba has … her independence, the reader (or at least this one) cannot help but be glad that she's found happiness. …
> That comment has well and truly brought me out of the romantic and un analytical closet; it seems difficult to mourn a relatively happy ending because the lady has lost her independence! I'll come back to you on the other points when I've got a bit more time - they look really interesting and deserve a bit more time and capacity for objective thought than I've got at the minute.'
> (Sara, RG forum)

In another message (on the next page) having read other opinions Ray wanted to share his opinion. He was referring to the topic of 'Impacts from Space'. This message has been cut short but is still quite long, so I have highlighted in bold various segments to draw attention to them.

.

'After reading all of these issues brought up in this forum, I am even more fascinated than before about the topic. I would also like to offer my opinion.

Humans, us, we have the ability to detect an object that may collide with the earth, or pass close by. I don't know if anyone has heard but apparently an object will pass between the earth and the moon in something like April 2026. Now, being able to predict that sort of thing, I'm impressed, so **I think ...**
I believe that the preparation for what to do with this object would have a complete change in the way that we view the world. for one thing, if it were made public, **I believe** that it could unite the peoples of the world under one cause, one purpose, which would be to keep the human race alive, along with all its culture, arts, ideas, religions etc(which could end war in the world (you can tell I'm an optimist)). **I think** …

Anyway, **back to the preparation**, there are as **many different solutions** to the problem as there are people on the earth, because everyone's minds have different perspectives on the world, but here are some **examples of the steps that may be taken.**

First - they must pinpoint where the object will strike the earth, and to what effect that will have on the entire planet (the spin of its axis, the planets orbit, its weather, features such as geology, polar melting etc.) and the next step should be based on that. for instance, if the object were to hit in Antarctica, then a global migration north would be a start. another idea could be to find a way to transport the ice from the ice shelves of the southern continent into the arctic ocean, in an effort to sustain the water supply if the impact were to occur. as far as i know, the safest place on the world would be the opposite side of it …

I seem to have waffled a lot here, so undoubtedly there will be many holes in what I have written! however, to sum it all up …
1- we should have plenty of time to prepare
2- the realisation of the magnitude of the situation could be enough to make people forget their differences and work together to survive it
3- ideas would have to be taken in from everywhere, and a mixture if ideas, both innovative, predictable, offensive and defensive should be used
4- delegation, with each of the worlds peoples doing what they do best/have best resources for.

The final point, to go back to the original question, "Is it possible that an impact from space could wipe out all civilisations on the Earth?" i would say yes, its possible, but we would do everything in our power to prevent that, and i believe that we may succeed.

Please if any of you that have the patience to read this, let me know what you think, I would be grateful.'

(Ray, A&S forum)

From the way Ray was writing it seemed that he was thinking/reflecting as he was doing so. He used 'I think...' and 'I believe...' several times. He outlined his argument by saying, 'First...' and went through it step by step. He then went 'back to the question', identified the problems again and offered solutions. Finally, he acknowledged towards the end of the message that he had 'waffled on' and summarised everything he had said. He knew that he had written too long a message and as a consequence probably might have lost some readers. He then made an earnest request to those readers who had been 'patient enough to read everything' to respond to his message.

These kinds of message showed commitment and how the forums offered the learners the opportunity to develop their skills for synthesising information that they had been gathering from the discussions, other resources and their prior knowledge. Ray, in the above message, used the word 'exponentially' and then remarked 'I wanted to get that in'. Other messages showed a very good command of vocabulary and evidence of vast reading.

Finally, I would like to present an example of how a community member proposed a new solution (Synthesis/Evaluation). In a discussion which was arguing that it has become increasingly difficult to distinguish between asteroids and planets, Faisal proposed a brand-new classification system outlined on the next page. This message from Ray exemplified the type of messages which showed how the participant synthesised information.

'I think that we should completely get rid of the concept of planet. Instead we should give each object a classification similar to the way we do stars. I would propose that we give each object a letter first which depends on its main constituent:
R – Rocky G – Gas I - Ice
and any others that are needed (I cant think of anything else), except perhaps adding an m for moon (e.g. Rm for our moon) and t for Trojan asteroids. Also I would add a number depending on diameter of the object:
1 - less than 100km
2 - 100 to 300km
3 - 300 to 600km (600km is the roughly threshold for an object to be round although it depends upon the mass of the object)
4 - 600 to 1200km
5 - 1200 to 3000km
6 - 3000 to 8000km
7 - 8000 to 20000
8 - 20000 to 60000km
9 - 60000 to 150000km
10 - 150000km and greater. (no solar planets fit this classification but lots of extra solar ones would)
This would give the following objects these classifications
Mercury - R6
Venus - R7
Earth - R7
Moon - R6m
Mars - R6
Vesta - R3
Ceres - R4
Jupiter - G9
Ganymede - R6m
Europa - R6m (It is covered in ice but mainly rock, i think)
Himalia - R2m (a small moon of Jupiter)
624 Hector - R2t (the largest Trojan asteroid of Jupiter)
Saturn - G9
Polydeuces - R1mt (its a trojan moon! I don't know if its ice or rock and cant find any information on it)
Uranus - G8
Neptune - G8
Pluto - R5
Charon - R4m
Quasar - R5 (although it is borderline 4/5)
Sedna - R5
2003 UB313 - R5 (it could be 6 but this is unlikely)
Haley's comet - I1

That's how I'd do it anyway.'

(Faisal, A&S forum)

The impressive classification system appeared to be a product of deep contemplation and imagination and offered a solution to a dilemma. It became apparent from the responses that followed that the other participants not only complimented Faisal on the conception of such a model but showed that they were considering the proposal through further argumentation about it. It seems reasonable to suggest that it must have been quite encouraging for Faisal to have an attentive audience who were willing to consider his ideas, as he himself did not post any other messages.

Exemplary messages like the ones we have seen above may become future goals for those gifted learners who may not have yet learnt to think critically. Exposure to high-quality, well thought-out messages may act as a teaching tool that scaffolds them gradually to think and write in a similar manner.

The second research question of this study asked if there was any prospect of developing higher order thinking skills in the online environment. The answer undoubtedly is yes; the opportunities were manifold. However, the onus remained on each individual learner to take advantage of these opportunities. This community consisted of gifted and talented learners ranging from 11-19 years of age, who had been identified as being 5-10 per cent of their respective schools. The resulting variation in age and ability levels and other factors influencing participation would determine how each learner became involved and to what extent they developed their thinking skills.

Therefore a reciprocal relationship between the rate and degree of participation in online learning activities and the evolution of community would determine the opportunities that became available to develop thinking skills. The

relevant point I believe is that the opportunities were, or could be, there if the right dynamics were present.

The following message summed up the opportunities the discussion forums had provided this particular member: 'opportunity to talk with others' who 'don't judge', opportunity to 'form more reasoned arguments for my opinions', 'build confidence' and get help with my 'career path'. These feelings were reiterated by several members.

> 'The discussion forums provide me with the opportunity to talk with people who share an interest in things I am interested in and don't judge me like many do at school. It is good to discuss and debate things that otherwise I would not have an opportunity to, and has helped me form more reasoned arguments for my opinions, as well as learning and understanding many things I wouldn't be able to otherwise. They have helped build my confidence, so that I am more active and forth-coming in my day-to-day life, which is very useful, and have helped me to decide upon my career path.' (Amit, Q)

8.3.4 Summary of the conceptual dimension of participation

In the above sections, I presented the analysis of participatory exchanges that led me to suggest that the online community was a place where it might be possible for gifted learners to enhance their higher order thinking skills. Of the messages coded. thirty-seven per cent were attributed to categories in the conceptual dimension. Referring back to Garrison *et al.*'s (2000) use of Dewey's (1933) principles to theorise the above type of interactions: the first principle is 'interaction', which is the merging of the private, personal and subjective world of the learner with the shared, social and objective world of others. It is through this interaction that meaning is constructed, shared and communicated. Ideas are conceived and clarified in order to understand the external world. The second principle is 'continuity'. This refers to the importance of establishing the framework for future learning. By engaging in and

adopting the methodology of reflective inquiry or learning critical thinking skills gifted learners are learning to learn, thus setting a foundation for new worthwhile learning experiences.

The next section looks at participation in the community from a pedagogical angle, exploring the role of the teacher (moderator/facilitator/tutor/leader) in facilitating the social and cognitive aspects of the community.

8.4 The pedagogical dimension of participation in an online community of inquiry

Eighteen per cent of all the messages coded in this study were attributed to the instructional or pedagogical skills of the facilitator. As discussed earlier in Chapter 3, Garrison *et al.* (2000) suggest it is the teaching presence rather than the presence of a teacher that contributes to meaningful online learning. They call it teaching presence as it is not necessarily the teacher who provides the instruction or guidance but any one else (other participants) who might find themselves capable of doing so. Although my preference is to use the word 'facilitator', I believe that no one word can encompass all the different hats an online instructor has to don. So I tend to oscillate between the following words: mentor, moderator, instructor, facilitator, expert, leader, resource person and tutor. In this community, the word 'moderator' was used quite often, but when I designed a question to address the role of the moderators in the community for the online questionnaire, I was advised to use the word 'tutor'. This advice came from the moderators. However, when I received the responses from the students, they displayed confusion about the word 'tutor' and who it really meant.

It does not matter what word is used, but what does matter is that it should remain consistent for the participants. Somewhere along the evolutionary process of the community, the word 'tutor' was substituted for the word 'moderator' by the

NAGTY administration but all the participants were still not aware of it. The following themes (Sections 8.4.1 – 8.4.6) emerged as I observed the interactions of the community members with the tutors.

It has been claimed that a warm friendly environment sets the foundation for social and cognitive experiences that nurture emotional and intellectual growth. The most important ingredients in creating such an environment are the participants themselves, but the catalyst is the teacher who is instrumental in getting the reaction or the types of interactions that will produce the desired effect of meaningful learning. The categories discussed below, which are related to teaching presence that emerged from various sources (literature, my personal experience as a teacher of gifted learners, the community of inquiry model (Garrison *et al.* 2000), observations of the text messages) were noticeable in the online community.

8.4.1 Modelling thinking processes

By encouraging divergent thinking, multiple perspectives and reflection through provocative open-ended questions, the tutors modelled, supported and offered encouragement for diverse points of view. As one tutor said:

> 'I found that the best way to do it if I want to teach them is to get behind the mandate of creating knowledge, it's better to just show them how to think philosophically rather than just pounding philosophy at them, you know, they are not asking for it.' (Tutor, FGM)

There were other behaviours that the tutors exhibited that might have been encouraging for the members who were less self-assured. For example, in the message below, the tutor is not afraid to admit that a certain task was 'difficult' and that he does not find everything easy but has to work at it. By showing his

willingness to show his own weakness he was helping to assure others that it was all right to do so.

> 'Now here is one I find really difficult to get on with. It is very very accurate in what it does but I think the interface is awkward. I don't suppose we can complain though as it is free.' (Tutor, A&S forum)

The preferred role of a teacher in a constructivist online environment may be seen as being that of a mentor who models the kinds of processes that aim to turn inquiry into concepts, rather than display and comparison of existing ideas. McLoughlin and Luca (2000) theorise ways of promoting knowledge construction in online conferencing environments. They propose tutor scaffolding and modelling as a way of engaging learners in higher thinking processes. This they believe can be done by integrating constructivist pedagogical principles into the teaching/mentoring roles.

> It is proposed that appropriate interventions by a teacher or online tutor, who can 'scaffold' higher order thinking by offering timely feedback, fostering independent thinking and presenting alternative viewpoints through argumentation may redirect online discussion towards knowledge construction. Timely questions, recommendations, comments and articulation of key concepts towards course requirements are also strategies that online tutors could use to guide performance. (p.3)

Dialogue and language are the two tools that are instrumental to higher order cognition, defined as the processes of articulation and sharing of ideas. McLouglin and Luca (2000) cite Vermunt (1999) as they summarise the role of a teacher by conceptualising it from three different angles: cognitive, affective and regulative. They view all these from the scaffolding perspective. The teacher scaffolds the cognitive dimensions by creating enriching challenging opportunities so that he or she end up 'stretching' the learners' existing level of comprehension by modelling critical

thinking skills. The teacher scaffolds the affective dimensions by empowering the students to take responsibility for their own learning. Finally, the regulative or the metacognitive dimensions can be scaffolded by allowing the learners to monitor their own progress.

The example below was chosen to exemplify several examples of the above-mentioned modelling of processes that were observed. The Ethics and Philosophy tutor was modelling her thinking processes about 'Determinism'.

> 'Anyone who claims a certain racial group will all be predisposed to act or behave in a certain way is making some recourse to biological determinism. One example could be Hitler's assault on the Jewish people, certainly.
>
> I, myself, am not a big fan of determinism. But I seem to be in the minority … I think one of the reasons is that so many issues come under the idea (as my last post indicated).
>
> For instance, I may have moments where I believe in fate, that something was 'meant to be', but I equally abhor the idea that every movement I make is somehow determined in the same sense as a rock will be frozen if you drop it in liquid nitrogen.
>
> In other words, we might have faith in some vague supernatural power affecting things occasionally (that you meet your future partner by running into them with your car) but this is nothing like scientific determinism. Arguably I am free as a human to make choices and take paths.
>
> But there is a deeper point here: **if it is all determined and free will is an illusion, then that doesn't matter to me**. Why?? well, my life plays out on the **human level, the experiential level**. One day a scientist might tell me the entire world is utterly different to how I think it is. But will I care? Well, perhaps not …
>
> An analogue for understanding this comes from Kant. One of Kant's central claims was that a world exists out there which cannot be seen by us - we are restrained by our need to see things in colour, in spatial dimensions, stuff like that. Now you might hang your head in disappointment that you will never know the true world, and claim the coffee you are holding is 'just an illusion'.
>
> Or, you might say hold on, I don't care about that 'something or other' I can't ever, in principle see, and am quite happy with my everyday experience.
>
> See the idea?' (Tutor, E&P forum)

8.4.2 Direct instruction

At the beginning of each thread the facilitators of all the forums provided direct instruction in the form of background information on the topic and some questions to get the participants going. The example below illustrates how a tutor put the initial instructions: after she had set the task (the question of the month) she gave a brief introduction of several views from different philosophers (Nietzsche, Socrates and Aristotle) about the topic. This seemed to be like an invitation for the participants to become acquainted with the work of these famous philosophers.

> 'Here is January's Question of the Month:
>
> **What is betrayal?** Is it an evil thing to do? If so, why?
>
> Is betraying a friend the same as betraying a stranger? According to Aristotle, friendship should be regarded as the supreme human relationship. Can betrayal ever be the right course of action? 'Is betrayal something we cannot get rid of even in our advanced and evolved society?
>
> According to Nietzsche, 'that lies should be necessary to life is part and parcel of the terrible and questionable character of existence.'
>
> Think of when someone says 'I spared you from the truth'. We think of this as being a kind of emotional move on the part of the liar.
>
> In this case, betraying someone's trust by lying to them might have been the 'moral' thing to do …
>
> I started this thread with a bit of famous Nietzchian negativity that lies are necessary to life. Well, let's add some more. He was also known for painting a kind of liberalising gloss on any immoral actions - deliberately ignoring normal ethical code was judged to be a form of freedom. Others have expressed this thought slightly differently, but the ethic remains the same. For Socrates wickedness was a loss of control, for a Nietzchian, it is liberalising. So, if the person mentioned above **told** the truth and hadn't spared the person, but did so through a desire to be nasty - is that person acting morally?
>
> Yes! She told the truth. No! Lying was the way to be morally sound (by protecting her friends emotions).' (Tutor, E&P forum)

8.4.3 Constructivist approach

The consistent effort of the tutors to be respectful, kind and encouraging seems to have led to the creation of a constructivist learning atmosphere. They acted like 'guides on the side' rather than the 'sages on the stage' and encouraged students to take the lead. As Sherry (1995) suggests, the role of a teacher is no longer to just dispense a 'fixed body of information; she becomes the facilitator of discovery learning for her students through progressive discourse' (p.348). This was demonstrated by the tutors in their questioning techniques. Not only did they ask leading questions as they introduced a topic, but they did so throughout the discussions.

The participants were often encouraged to take leading roles and post their own questions. In the message below one of the tutors is telling the members that they should not 'wait around' for her or Georgina, who is the other tutor to post questions.

> 'Hey! You shouldn't feel like you have to wait around for Georgina or I to post questions. It would be great if you came up with your own as well. They'd probably be far more inspiring … But I'm glad you like the book and I hope you've got some thoughts on the questions I've raised above.'
>
> (Tutor, RG Forum)

This offer, however, was not taken up very often. There was one time in the Reading forum where a participant, Mandy, was persuaded to take a leading role. Mandy seemed to oblige because she had suggested that the members read that particular book, but although she posted the introductory comments just like the facilitator she did not take a very active part. The reluctance may perhaps be attributed to a simple lack of confidence on her part.

There were several examples, however, where a different type of leading role was taken. This usually happened when a participant who had been making quite advanced arguments showed that he or she was well informed about the topic and he or she then took the time to answer a fundamental question from another participant who was having trouble following the discussion. For example, the message on the next page shows how when Mark asked 'What makes a comet different from a planet?', David quite patiently explained the ground rules to him.

> 'The most obvious difference is probably how much more elliptical comets' orbits are than planets' orbits, to the extent that volatile materials on the surfaces of comets, which are normally frozen, are made to evaporate when the comets get close to the Sun to form the comets' tails.
>
> I think comets are thought to be mainly just balls of rubble and ice rather than solid rock as well, although I'm not sure.' (David, A&S forum)

As the messages piled up in a particular thread, the tutor summarised what he or she thought had already been said and integrated it into the discussion. This was found to be very helpful by those participants who had to join in the discussions midway. It also helped to clarify ideas for those discussants who had been there all the time, and aided in steering the conversation further. Most of all it helped the learners to see the process of synthesising information being modelled. McLoughlin and Luca (2000) call the above processes 'tutor scaffolding of inquiry and criticism of ideas'. They believe that this sort of scaffolding is helpful in engaging learners in higher order thinking and 'the tutor can model inquiry and multiple perspectives by going through the process of putting a solution to the problem online, moderating the discussion and then developing a summary of the different viewpoints and issues at the end of the week' (p.12).

8.4.4 Asking leading questions

The Office of Technology Assessment (US Congress, 1998) notes that inquiry teaching promotes an environment that tolerates ambiguity and encourages students' questions. For example, when discussing the death of Charlie, a character from the book *Private Peaceful*, Jon commented about the sense of freedom another character, Tommo, might have felt at his brother Charlie's death; the tutor urged him to think further and ask the question why Tommo would feel like that. He (the tutor) also invited others to join in and comment. The first part of the message in red shows the tutor using the 'reply' feature of the software to address the part of the message the response was for. The questions asked seemed to be directing thoughts into deeper thinking processes where he was being encouraged to ask questions.

> In the passage that describes Charlie's death and
> > after that, I get the impression that something died and something was born in >Tommo. Something Charlie related died, deep inside him, maybe something to do
> > with the capability of loving and worshipping someone the way he did Charlie. I >think a new confidence was born that set Tommo free. I have no idea why, but I
> > felt that during the passage describing Charlie's death Tommo was set free.
>
> 'But why do you think Tommo writes his story? Isn't the story a sign that he continues to live in the past and idealize his brother? What do the rest of you reckon? Could we view Charlie's death as necessary in some way for Tommo to feel liberated? Can he only be himself without his brother around?' (Tutor, RG forum)

These types of leading questions were considered to be very helpful by 60 per cent of the respondents of the online questionnaire. However, it was also revealed that the type of questions the moderators asked could have been much harder. The respondents also seemed to understand the reasons why the tutors might have been reluctant to ask questions that were too difficult; it might have been too confusing or

off-putting for the younger members. However, these respondents said that since the whole reason behind using the forums at NAGTY was for enriching the participants, the questions should be 'difficult'.

> 'Despite the tutor being an expert in their field, I have found, on the forums that I have used, they seem to shy away from asking us hard questions and setting challenging tasks. This may be because they don't want to confuse us or maybe because there are many younger members.'
>
> 'Sometimes the tutors could do with asking more difficult questions - I feel they are dubious about making the forums seem off putting sometimes, but really, there are plenty of general chat forums, and NAGTY should be for furthering learning, for challenges to be relished!'
>
> 'Too difficult? That's how it's MEANT to be - stretching us.' (Pami, Q)

8.4.5 Encouragement/Self-disclosure

The facilitators used the first names of participants to communicate, encourage and answer specific questions. Encouraging remarks, such as 'I love your idea of a 'super-Daisy'!' or 'That really helps to make sense of Gatsby's view of Daisy' or 'You highlight a number of really important issues here …' appeared often. There were certain times when the facilitators were very expressive and disclosed information about themselves. This sort of behaviour generated a sense of warmth and closeness within the community. By exposing their own vulnerability the tutors were validating similar feelings for other learners, encouraging them to express themselves and to ask any type of questions without feeling self-conscious about it.

> 'Hurrah! am so glad that you enjoyed it. Vonnegut is a particularly obsession of mine, so if you're prepared to trust my judgement I'd thoroughly recommend 'Time quake' or 'Breakfast of Champions'. They both have a couple of slightly adult moments, but nothing too bad.'
>
> (Tutor, RG forum)

8.4.6 Rule enforcing

The teacher also had the role of being an enforcer of rules; a task which might have sometimes reduced the fuzzy warm feeling of this community. It was necessary to give occasional reminders to make sure everyone followed the etiquette established by NAGTY administration. Some tutors did this discreetly by addressing the member concerned via email, while others used the medium to address everyone at once.

> 'Can I remind members of this forum that we expect high quality use of language in the forum and proper capitalisation of words should be used. There are now a few examples of people using 'I' instead of "I". As yet nobody has used text speak, but just a reminder this is not allowed either. Sorry to have to mention this folks, but those are the rules of the forum.' (Tutor, A&S forum)

8.4.7 Tutor perceptions about the pedagogical aspect of the community

During the focus group meeting, I asked about the amount of time the tutors spent on their moderating/teaching roles. One of them jokingly said that she couldn't stop herself from logging on and checking what was going on in the discussion forum.

> 'Four times a day … its more than that … *laughs* … I logged in boxing day!' I can't leave the damn thing alone…' (Tutor, FGM)

When asked how close they felt to the members, the tutors indicated that they felt quite drawn and sometimes attached to the learners so that when they had to leave there was a feeling of sadness.

> 'because when I first started off … I got very close to them … and eventually … very nice situation … and then after about five months … they all disappeared into black holes, and I guess most of them all moved on … I felt terrible … I thought D … isn't posting. Any more ... and I felt awful about it.' (Tutor, FGM)

However, with the increasing membership, this started to change. There were so many new members that it was hard to recognise the core posters.

> 'and now I just have so many new members … so many _ that I don't seem to have at the … moment core regular posters. There are a lot of different names. There is no one I really __ with, close to … I feel some distance from them …'
> (Tutor, FGM)

Some other concerns were voiced by the tutors. For example, there was a common consensus that the participants showed selective attentiveness to posts, 'neglecting' some parts 'completely'. This tended to distort the flow of the discussions as the others responded 'collectively' to one member's comment. This meant that the 'neglect' kept on 'piling up'.

> '… they choose and pick what they want. See, you post a question especially these beginning questions on a topic when you are trying to move them along, often they will just all completely be neglected and they'll pick up on something totally different and it's almost like a collective response to that. One person neglects it and that neglect keeps piling up.'
> (Tutor, FGM)

Their commitment to put the gifted and talented learners at the centre of their own learning, providing them with the opportunity to participate in a vigorous learning environment seemed to be paying off, but they were still struggling to get the learners to become less reliant on them. One tutor commented that: 'As gifted kids and clearly as talented as they are I would like to see them sharing more … less reliant on a teacher-classroom based sort of dynamic'. This feeling is reflected in what McIntosh (2005) says about meta-cognition and construction of knowledge, which he believes only begins when the learners ask the questions instead of the teacher.

8.4.8 Summary of the pedagogical dimension of participation

The above section looked at the pedagogical dimension of participation in this online community of gifted learners by examining how the tutors used their teaching expertise to instruct and guide the learners. Of the messages coded in the forums seventeen per cent were attributed to categories in the pedagogical dimension. The tutors tried to create a more student-centred environment by encouraging the learners to think more critically by modelling. They set tasks and gave introductory instructions and asked leading questions to direct the discussions. While they tried to create a warm and friendly atmosphere by their own behaviours they also reinforced the community rules whenever necessary.

The following section examines the concept of what it means to be an active participant within the community by drawing on data that emerged largely from the questionnaire but also taking into account the observations made during the content analysis phase.

8.5 Meeting needs: student and tutor perceptions

Tutor perceptions of the community's ability to meet any of the needs of gifted and talented learners were revealed during the discussions at the focus group meeting. When the tutors were asked whether they thought that the forums were helping to meet any of the needs of the gifted students, there was an instant common consensus that they did. When asked how, one of them remarked: 'Very much so, very passionately so …'. There was common consensus that the forums:

- provided social benefits in terms of constructing positive identities within a community ethos;
- provided factual knowledge;

- nurtured ambition;
- provided expertise;
- honed team analytical and working skills;
- encouraged 'learning for learning's sake', as one of the tutors commented:

> 'I think this is the last bastion of learning for learning's sake...' and not because one was to be tested on it.' (Tutor, FGM)

The tutors also felt that there was a greater sense of freedom about starting new threads at the end in comparison to when the forums first started. This was the result of them realising that the community is the students' space and place and they should be able to discuss almost anything in the relevant places.

Table 30 below presents the students' perceptions about the ability of the online community to meet their needs.

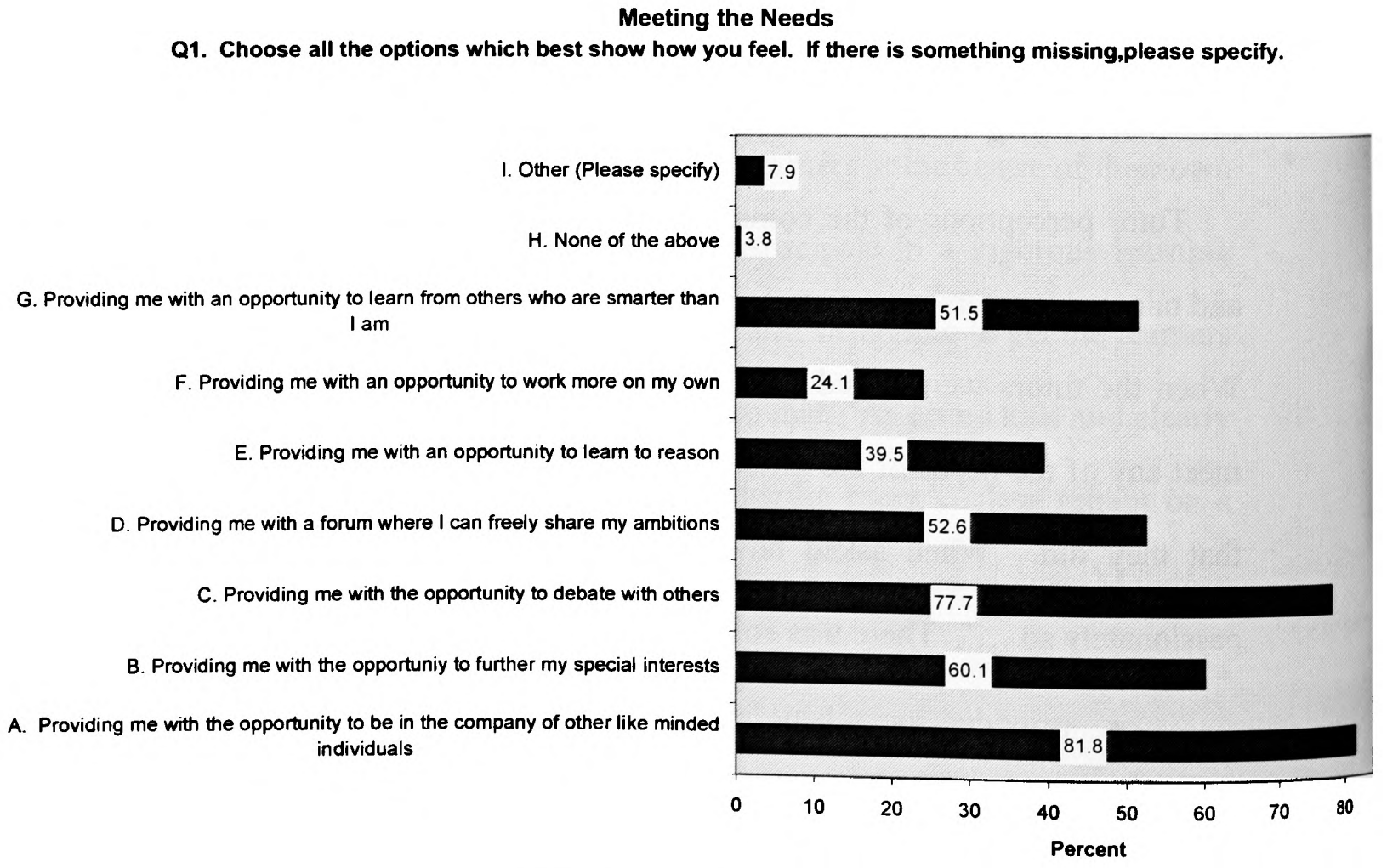


Table 30: Question about needs

The results indicated that 82 per cent of the members who responded felt that the online gifted community was able to meet their needs by providing them with an opportunity to be with other gifted and talented students. Sixty per cent of the respondents agreed that the community provided them with an opportunity to further their special interests and 78 per cent agreed that the online community provided them with the opportunity to debate with others. Of the respondents, 53 per cent felt that the forums provided them with a place where they could share their ambitions and 40 per cent of the members felt that they had an opportunity to 'learn to reason' within the online community. Fifty-two per cent said that they were able to learn by being able to communicate with others smarter than them. Only 24 respondents of the respondents indicated that the community provided them with an opportunity for independent work.

Open-ended comments further iterated some of the points above and those previously mentioned in the earlier sections. It was also revealed that the community helped meet the needs of the gifted learners in what they called a 'bully-free zone'. The following comments helped to sum up what the students said about what the community could provide for them.

> 'Providing me with an opportunity to freely discuss my interests, misunderstandings and ideas in an environment where I know that nobody else will "bully" or "humiliate" someone for an interest in knowledge.'
> (Joe, Q)
>
> 'Providing an opportunity to laugh, be cheered up and share troubles.'
> (Dave, Q)
>
> 'Giving me a chance to express my view without people thinking that I'm "weird"'.
> (Sandy, Q)

The members also reiterated that the community provided them with confidence to get along better with others:

> 'Providing me with the confidence in myself and my abilities to be more open and forthcoming in schoolwork and discussion, and to get along with others better and be less self-conscious.' (Nancy, Q)
>
> 'Feel more confident that others want to listen to my views and become more confident in my own abilities.' (George, Q)
>
> 'Providing me with a chance to exchange views on topics I can't talk to others about because they won't understand it.' (Mel, Q)
>
> 'Being able to communicate at a similar level to people of your own age - not necessarily about mainstream media, like at school.' (Ahmed, Q)
>
> 'Providing me with the opportunity to speak freely without feeling like I'm showing off.' (Harry, Q)
>
> 'Providing me with access to people who enjoy participating in intelligent discussions.' (Dave, Q)

The above sections presented the perceptions of students and tutors about the opportunities this online community had afforded learners.

8.6 Conclusion

The aim of this chapter was to present the findings for this study through content analysis of online discussion forums and strives to derive meaningful concepts from a corpus of text messages. The analysis of both the social and cognitive dimensions made it possible to identify the skills linked to emotional readiness for receiving and responding to others in the affective domain and to identify skills linked to critical reasoning in the cognitive domain.

In answer to the first operational research question, which asked how the learners realised participation in this community of inquiry, the analysis of the archived messages showed that participants engaged in several types of exchanges of

information such as comparison of ideas, sharing of knowledge and personal experiences. Fundamental to these exchanges were processes that were both social and participatory and involved learners in cognitive divergence, which led to a modification of ideas.

Dewey (1933) sees construction of knowledge as a cyclic ongoing process, oscillating between the personal world of the participant and the shared world of others, in which there is divergence, reflection and resolution of ideas. These processes were evident in the dialogue of the forums. According to Mercer (2000:66) Mikhail Bakhtin claimed that relationships are created between 'given' and 'new' knowledge through the use of language and everything that is said is a reflection of all that has already been said. In other words, even those messages that did not end up in a dialogue were still representations of or 'echoes of the voices of previous speakers or writers' (p.66). For many of the gifted learners this aspect of dialogue was extremely empowering. Student perceptions of the discussion forum showed that they were positive and committed to the processes that encouraged a sense of belonging to the community of gifted learners which was supportive of the sharing of ideas.

The second research operational question asked if participation in the community was able to provide opportunities for the gifted learners to develop higher order thinking skills. A preponderance of the interchanges remained at the level of comparing and sharing ideas. But this might be the result of participants choosing to stay in their comfort zones. However, these learners may still have reflected and questioned their own and others' ideas but were simply not brave enough to voice their opinions. On the other hand, there were numerous examples of the type of participants who were courageous, assertive and confident to challenge views and

were further steered by the tutors towards deeper levels of inquiry which engaged them in critical analysis of each other's ideas (higher order thinking skills).

It was found that by modelling thinking processes, showing their expertise in the subject, disclosing information, giving encouragement, providing flexible yet structured content, providing a safe and warm environment, the tutors were the main instruments behind facilitating a successful production of a community that works. It was also found that the online discussion forums *did* have the potential to help address some needs of the gifted and talented learners. These needs are discussed in the next chapter which brings together the findings of this research and their place as a possible effective online pedagogy for gifted and talented learners. It will also examine the limitations of this study and offer some suggestions for future research.

Chapter 9

Conclusion

9.1 Chapter overview

This chapter gathers salient points from the findings, and attempts to extrapolate concepts and implications for future research and practice. Section 9.2 responds to the overarching research question and identifies substantive contributions offered by this study, and Section 9.3 discusses these further in relation to each of the forums. Next, Section 9.4 discusses the findings in relation to the possible potential of the online community by returning to consider arguments from Chapters 2 and 3. and Section 9.5 explores how the community could meet the needs of gifted and talented learners. Section 9.6 discusses the implications for teaching and policy and how the gifted education community might respond to the main findings. Finally, in Sections 9.7 and 9.8 critical reflection on the study's limitations are presented with some suggestions for further research.

9.2 Summary and discussion of results

Educational research on giftedness has mostly focused on strategies for meeting the varied needs of gifted and talented learners as methods within formal institutional settings, while the possibility of meeting their needs in informal contexts lacks attention. Literature on conceptualising technology as an online pedagogy to increase the opportunities for gifted learner to meet their full potential are almost non-existent and most accounts are isolated, inexplicit and lack in-depth exploration of the topic. This study's significance relates to its place in our understanding of gifted learners' use of ICT in the form of online discussion forums; a largely under-researched and poorly understood area.

The primary goal of this study has been to describe, in as complete a manner as possible, what takes place within an online community of gifted learners: how the dynamics of the online discussion might foster student social interaction and dialogue and facilitate students' development of higher order thinking skills. The investigation was not focused on individual student learning and achievement outcomes, but was intended to document how online environments may encourage higher order cognitive and metacognitive processing. The overarching research question guiding this exploration of the dynamics of online interaction asked whether online discussion forums, in promoting a community of inquiry for gifted and talented learners, had the potential to be an out-of-school support system that might be able to meet some of their social and intellectual needs. The two operational questions that provided the focus for the investigation were:

1. What does participation look like in the realisation of a community of inquiry for gifted and talented learners?
2. What evidence is there that the students participating in an online community of inquiry develop higher order thinking skills?

By using the three dimensions developed in the theoretical framework - relational, conceptual and pedagogical - findings pertaining to each research question are presented in the following sections (9.2.1 - 9.2.3).

9.2.1 The relational dimension (operational research question 1)

Forty-six per cent of the messages coded in the forums were attributed to categories in the relational dimension. In response to the first research question, overall analyses revealed that gifted learners realised participation in this online environment by collaboratively constructing knowledge through social negotiation, by relating to each

other and by sharing a sense of community and a common goal. Participation realised through social interaction gave rise to three major themes: sense of community, sense of presence and identity and ways of participating. Each of these themes is discussed below.

A sense of community

By participating in the asynchronous online discussion forums, a community culture was created in which the gifted learners felt comfortable enough to share their innermost ambitions for the future and their interests and to discuss any concerns about their 'giftedness' without any inhibitions. Feelings of belonging to a unique club, a sense of camaraderie, where the members could be trusted with the information posted, feelings that participation in this supportive environment would be beneficial for their learning goals were prevalent. This finding supports Rovai's (2002a, 2002b) argument that a community can be constitutively defined in terms of four components: spirit, trust, interaction and learning. Several other researchers have reported evidence of a 'sense of community' in virtual communities and its importance to learning (Bullen, 1998; Conrad and Kanuka, 1999; Gunawardena and Zittle, 1997; Kollock and Smith, 1996; McLaughlin *et al.* 1995; Rheingold, 1993; Wegerif, 1998). Rowntree (1995) found that learners in communities with a sense of camaraderie and a feeling of involvement tend to learn not only by themselves, but from each other and from the instructors. This research supports this finding.

Sense of presence and identity

Henri and Pudelko (2002) maintain that participation in a community life provides the foundations for learning and identity construction processes. The sense of belonging to a community of members who were like them appeared to give these gifted and talented participants a stronger sense of identity, one which allowed them to be more at ease with their aspirations and needs for challenge and diversity and helped to alleviate the sense of alienation and hyper-individuality some gifted and talented learners may endure at school (Gross, 1998). As suggested by Cutler (1995), the more the members shared their personal information, the more the others were able to respond. The ability to disclose information and reflect on it implies a sense of self-awareness and self-concept.

'Gifted children develop identity in the context of values and influences from others around them' (Piechowski, 1991 as cited in Lovecky, 1997:1). The values they end up incorporating eventually determine how much peer acceptance will matter to them. Self-acceptance – acceptance of one's self – is an essential stage in identity formation and in the development of sound interpersonal relationships (Gross, 1998). Thus the 'capacity to develop strong and lasting friendships cannot develop in the gifted individual until she herself has experienced the glad peace of being understood and accepted by "kindred spirits" – people of similar abilities, values and interests' (Silverman, 1997:6).

The atmosphere of the community was perceived as being a warm, safe, trustworthy and friendly environment in which gifted learners were able to find support for both their emotional and their cognitive needs. The community encouraged inquiry,

feedback, and collaboration with mentors and other members in a non-judgemental risk-taking environment. With the help of the facilitators the community culture exhibited respect and concern for all. The members felt that their contributions were always seriously considered by a cohort of others – students and staff – who were committed to responding to and working with the students material. According to Schofield and Hotulainen (2004) if gifted students can find even one other person who is willing to consider their ideas, they are likely to stay motivated, and not become disenchanted with the less challenging work they have to do and drop out of school. According to McMillan and Chavis (1986), the support provided can promote feelings of integration and fulfilment of needs, a finding endorsed by this study.

The members appeared to have taken naturally to engaging with a Web-based forum, and expressed themselves with accuracy. The text-based medium did not seem in any way to adversely affect the quality of writing that the students produced, as was evident from the relatively frequent use of emoticons and expressive language. Most of the members were committed to tasks assigned to them and showed persistence, characteristics attributed to gifted and talented learners (Renzulli and Reis, 1997).

Ways of participating

Additional aspects of how participation was realised in this online community of inquiry were brought to light through the analyses of quantitative data which made it possible to determine two learning styles or participation. First, there were members who participated by reading the messages but remained silent most of the time – the active-silent members who have been called 'lurkers' or 'witness learners' elsewhere (Fritsch,

1997 as cited in Beaudoin, 2002). Second, there were members who participated by both reading and posting messages – the active-vocal members.

Case studies that examined each type of participation within each forum were helpful in showing how participation varied from forum to forum. It was found that some topics generated enough interest for the members to continue visiting them even when a new monthly topic had been introduced. By observing the logging patterns of the active-silent members it became possible to conclude that they were not only just logging in but actually reading the messages as they came back repeatedly to the same thread and stayed logged in over a period of time. It was anticipated that some form of learning was occurring in this participatory activity. This finding echoes other researchers' findings that 'lurkers' do learn, and it is a learning-style preference for them (Beaudoin, 2002; Sherry, 1998).

As the social space created by this medium allows identities to be created and negotiated (Gunawardena, 1995; Jones, 1995), the members might have chosen to remain hidden, or perhaps even assumed a persona of a more confident individual, in which case they might have become more vocal than in face-to-face situations. Some gifted learners are more introverted than others and prefer to internalise information they receive from reading other opinions. They may enjoy and feel motivated by forming their own opinions but not need to voice them. These findings concur with those of Kearsley (1995) who contends that one of the reasons that members prefer only to read and not post may be because the more autonomous self-directed learners, who tend to be more reflective, do not necessarily require the reinforcement from interacting with more 'other-directed' peers.

The questionnaire revealed that a relatively small number of members chose to remain silent because they felt shy and intimidated by the large audience and the superior quality of the messages posted. They were also concerned about how sometimes the discussions were hijacked by a few core posters and they felt left out. So for some members silent participation or not wanting to post was related to remaining anonymous and preserving privacy and safety (Nonnecke and Preece, 2000). Technical problems (confusing interface, lack of computer skills), asynchronicity of the messages, lack of time, views already being expressed and lengthy moderation time were amongst the reasons expressed for their remaining silent.

For those gifted learners who enjoyed the space provided for them to externalise their thoughts, posting was perceived as a confidence builder for discussions in face-to-face situations. Writing helped them to reflect and organise their ideas, and when they received responses they were encouraged and felt happy.

9.2.2 The conceptual dimension (operational research question 2)

Of the messages coded in the forums, thirty-seven per cent were attributed to categories in the conceptual dimension. In response to the second research question, there were several incidences which indicated that the participatory activities in this community were leading to focused and deep discussions which showed evidence of higher order thinking skills being employed. The stimuli needed for higher order thinking processes appeared to be products of the social, participatory and shared verbal activity in the online environment.

The opportunity provided by the medium to view multiple opinions of other members of similar or higher ability levels allowed self-assessment or reflection which

made the member aware of their own strengths and weaknesses. Valuable peer feedback and mentoring within these online discussions allowed students to scaffold each other's learning. The flexible, yet structured environment helped to set goals: the time constraints provided (book or topic of the month) direction but did not limit.

These findings support claims that electronic conferencing can be an effective support for learning thinking skills through collaborative learning. Such claims can be found in Harasim *et al.* (1995), Henri (1991), Mason (1991), McConnell (1994) and McLoughlin and Luca (2000). Henri (1991), for example, used a different conceptualisation of critical thinking and found most students were using lower-level clarification skills at the surface level. Mason (1991) did not look specifically for evidence of critical thinking, but used a typology of six types of student contributions. She concluded that students were reflective, self-directed and active. Harasim (1990) found students used active questioning, elaboration and/or debate. Webb *et al.* (1994) and Newman *et al.* (1995) found evidence of critical thinking, however in addition to using a different conceptualisation of critical thinking they also ignored the quantity of participation in their analysis.

The findings also concurred with those of other researchers' who have claimed that higher order thinking is a cumulative process of both the private world (internal activities such as reflection) and the shared world (external activities such as verbal engagement with the others) (Anderson and Garrison, 1995; McKendree *et al.* 1998). Technology, in various forms from language to the Internet (in this case the asynchronous discussions), supports the external social part of the movement of thought. There was evidence of a constant movement of the internalisation of social thinking into individual

thinking and externalisation out again into social thinking. Higher order thinking was found in the whole movement of thought and not just in the individual part of this movement (Dewey, 1933; Wegerif, 2002). This study concurs with Mercer (2000) when he contends that communities of inquiry enable members to achieve collaboratively than any individual member could achieve on their own

9.2.3 The pedagogical dimension

Of the messages coded in the forums, seventeen per cent were attributed to categories in the pedagogical dimension. The facilitators/tutors were the cementing force that brought together the social and cognitive functions of this community and made it a successful pedagogy. They offered direction through posting messages that modelled what was expected from the participants. They were responsible for creating the safe respectful warm trustworthy environment by establishing rules, by disclosing information about themselves that made them vulnerable and human, by setting tasks but being flexible, by asking leading questions that encouraged higher order thinking skills and by being learners' mentors. The learners demonstrated a high level of respect for both each other and their tutors. This attitude was directly reciprocated by the tutors. This mutually respectful attitude appeared to dissolve the barriers that often exist in traditional schooling contexts.

The students seemed to dominate the discussion, not the facilitators; a finding that indicated that this conference was only somewhat student-centred. The facilitator was purposefully trying to create a learning environment wherein the students were encouraged to take charge of their own learning and to become more responsive to each other. Even though the tutors tried to produce a constructivist learner-centred

environment offering the participants chances opportunities to take the lead and encouraged independence, the online space of all three academic groups seemed to replicate a teacher-centred approach. The students waited for questions at the beginning of each month, responded to what was asked and then waited for the tutor to summarise all the ideas. This might have been a result of the conditioning of the participants who got accustomed to responding in a certain pattern, leading to a more surface-level processing and display of knowledge. This might also have been due to a lack of knowledge or even inability on the part of the learners to carry out in depth processing of the information (Henri, 1991). However, most of the learners were not only engaging voluntarily, they engaged thoughtfully and creatively, and adopted the hypothetical scenarios for critique and discussion.

While the findings described above apply to the overall online community there were some differences noted within the forums. The qualitative nature of this study made it possible to ascertain the different stages of social and cognitive participation achieved and the quantitative data provided evidence regarding the way the members chose to participate actively. It was found that the stages reached were mainly dependent on the nature of the topic and also the age of the participants. The next section discusses each forum in more detail.

9.3 The forums

As discussed earlier in Chapter 4, based on the hierarchical stages of the affective and cognitive domains of the taxonomy of educational objectives (Bloom *et al.* 1956; Krathwohl *et al.* 1964), the relational and the conceptual dimensions had stages built into

the coding templates. The relational dimension had five stages: receiving, responding, valuing, organisation of values and internalisation of values (p.153). The conceptual dimension had six stages: knowledge exploration, comprehension, application, analysis, synthesis and evaluation (p.157). The last three were considered to be higher order thinking skills. The pedagogical dimension did not have any stages but the messages coded were able to indicate either a high or low teaching presence when comparing the four forums. The purpose of differentiating between the stages reached was to get a clear idea of how the participation differed in the forums.

In the following sections the stages of participation reached in the relational, conceptual and pedagogical dimensions within each forum are discussed by expanding on the differences noted between the members and their characteristics and the presence of the tutors. Table 31 shows the various stages reached in each forum.

Stages reached within each forum			
Forum/Group	Relational dimension	Conceptual dimension	Pedagogical dimension
Ethics and Philosophy (E&P)	5	5[6]	High
Reading Group (RG)	3[4;5]	3[4;5]	High
Astronomy and Space (A&S)	2[3]	3[4;5]	Low
General Debates (GD)	2	2[3]	Low

Table 31: Stages reached in each dimension in each forum

9.3.1 Ethics and Philosophy

The membership of this forum was predominately female (68 per cent) with a mean age of 16-17 years. It had the highest number of members aged 17-20 (46 per cent) compared to the other three forums. As a result of more members being older and perhaps also because of the nature of the topics this forum was the only one in which there was evidence of exchanges which reached the highest level in all the dimensions.

For the relational dimension there was evidence of some members posting messages that were coded as 'Stage 5: Internalisation of values'. As has been shown in various examples in Chapter 8 these messages showed self-reliance and independence with a willingness and an openness to work with others.

Similarly in the conceptual dimension, this forum had a small number of messages that were coded as being in Stages 5 (Synthesis) and 6 (Evaluation). The messages showed connection of ideas from various sources, summarising and proposing a solution leading sometimes to new or original design/idea/argument. Evidence provided for an argument was questioned and there was recognition of subjectivity. Examples given in Chapter 8 portrayed the above stages of thinking.

For the pedagogical dimension, it was noted through the teaching and learning that was taking place in the forum that the tutor had a very high presence and embodied those qualities that led to the members participating at the higher stages. She was particularly vigilant about addressing different arguments raised. She referred to each argument by using the first name of the discussant and she summarised the posts several times during a month, if the debates became intensive. She was sensitive and open to suggestions and often offered encouragement and was responsible for the creation of a warm humorous friendly environment for the members. The high tutor engagement was especially relevant in this forum, where debate and argument are central.

9.3.2 The Reading Group

This forum also had a predominantly female membership (76 per cent) but with the mean age of 15 years. Themes derived from two books each month dictated the topics for discussions. With the exception of a very few members the level of discussions

mostly remained at the receiving and responding stages in the relational dimension. The members expressed appreciation freely, readily asked and answered questions, showed solidarity with the group and disclosed information with a good sense of humour. In spite of this warm and friendly environment the tone of the forum seemed to be set – as the tutor suggested it appeared as though this forum had taken on the air of a 'girls' reading club'. Just a few messages were coded in the third stage (Valuing) but there were no messages that showed there was any organisation of values (Stage 4) or internalisation of values (Stage 5).

For the conceptual dimension participatory exchanges showed evidence of reaching Stages 4/5 (Analysis/Synthesis) but the number of members that went to that level was smaller than in the Ethics and Philosophy forum. The majority of the members remained at Stages 2/3 (Comprehension/Application). This may have been because there were other threads like 'Creative writing' that members contributed to which were run by the same tutor. While visiting the 'Creative writing' thread it was observed that a few RG members here participating were contributing to this thread at a deeper level.

According to the tutor, in spite of her efforts to get the discussions to a higher level they remained mostly at Stage 3 (Application)?. She believed that it all depended on who the core posters were and how her first post was answered; these two factors determined the direction the discussion would take.

The tutor's intensity and effort to get more members to participate showed a high presence in the pedagogical dimension. One of the innovative ideas the tutor tried was to have hourly live chats once a month. Sometimes there were two tutors present at this event. The number of members participating in this chat about the monthly book slowly

increased to between 6 and 15. Both the tutors and the participants found these events to be invigorating but exhausting at times as it meant concentrating throughout the conversation, keeping track of and answering all the different responses. The same members participated each month and the level of discussions was usually between Stages 4 and 5 as most of them were expanding on things that had already been discussed. The real benefit of this time was that the tutors were giving students the opportunity to develop their thoughts even further by answering their questions immediately and posing more questions.

One of the difficulties experienced by the tutors was getting the choice of the book right. Even though a thread had been started in which the members themselves suggested books it was difficult to get a book that everyone would be interested in at the same levels. There were some gender-related issues too about the types of books that were being read.

Overall, the Reading Group was a good starting point for those gifted and talented students who were looking for peers to share their love of books, who wanted to discover what books others were reading and it was also a stepping stone to more creative writing threads within the forum, such as 'Poetry' and 'Creative writing'. A book was compiled from some of the best works of the young authors and marketed to help support charity work.

Analysis of overall participation in all the forums revealed that the Reading Group had the most silent participants which indicated that the 'lurkers' were interested in what the others were saying about the books. This might also mean that they were then getting the books and reading them too.

9.3.3 Astronomy and Space

This forum had a higher male membership than any of the other forums: 48 per cent compared to 32 per cent in the E&P forum and 25 per cent in the RG forum and 46 per cent in GD forum. Even though the mean age was 15 there was a higher incidence of members who were between the ages of 12 and 13 in this forum than any other. This forum had members who were effervescing enthusiasm for the topic. The younger members were bubbly and eager to show their interest and also just to 'show off'. However, some of the older members were good role models in that they were patient and helpful to those in need. The atmosphere was friendly, supportive and warm ,and the members felt comfortable enough to disclose personal information, share their interests and joke around too. While the stages reached in the relational dimension were mostly 1 and 2 (Receiving and Responding), there were some messages that were coded as Stage 3 (Valuing). Some members exhibited high levels of persistence and sensitivity, and showed that that they recognised and valued the importance of the new skills and information they were being given the opportunity to learn.

This forum offered a different type of experience. The members had to not only download software after reading about it but also to produce images to show their participation with contributions reaching Stage 3 (Application) in the conceptual dimension. There were some incidences of Stages 4/5/6 (Analysis, Synthesis and Evaluation) being reached but these were more common in the topics that required discussion rather than image production.

In the pedagogical dimension, although there were two tutors involved who provided excellent introductory posts to each topic with appropriate background

information and other websites to visit, there seemed to be a lower presence during the month when compared to the E&P and RG forums. The tutors, however, seemed to slowly learn the tools necessary for facilitating discourse as they began to address the members with their first names, offer encouragement and ask more questions. There were no summary posts, but perhaps the nature of some of the topics like 'Image processing' made this redundant.

Overall, in this forum the excitement and interest portrayed initially seemed to fade away over the year. This may have been because topics became repetitive or perhaps the tutors did not have enough time to invest. The Astronomy and Space forum was closed in February 2005, and all the threads were archived and moved to the Science forum where the members could probably find more diversity in topics.

9.3.4 General Debates

This forum had a huge membership (2632) with approximately the same number of males (46 per cent) and females (54 per cent), with more than half the members being between the ages of 14 and 16. This forum differed from the other three in that it was not an academic study group but one in which the members could discuss almost any topic of interest. There was no one facilitating the discourse. However, the messages were still moderated.

The advantage of this forum was the opportunity that was offered to the members to discuss topical issues about politics, war, school- related concerns, giftedness, religious and spiritual beliefs, vegetarianism and many others. The interest in the subject itself was what steered the discussions. When the topic discussion had been exhausted it terminated.

The disadvantage was that in some threads there was a lot of repetition as there were no summary posts from a tutor. The newer participants sometimes did not take enough time to read what was already posted. In the relational dimension, the messages were mostly Stages 1 and 2 (Receiving and Responding) with some Stage 3 (Valuing) posts especially in topics where strong beliefs were being challenged.

In the conceptual dimension, although the level of participation remained at Stages 1 (Knowledge exploration) and 2 (Comprehension), the wealth of information that was shared between the participants about their personal faith, religion and diets offered a multicultural aspect of education that would probably not be feasible in face-to-face discussions. There was a lot of respect shown for the differences between cultures , and members were not afraid to share what they felt. The forum was a treasure house of information; members were being enlightened about various aspects of life just by their reading of the messages.

9.3.5 Summary of the forums

The potential of the discussion forums to meet the needs of gifted learners by providing them with the necessary social environment and the cognitive challenges became more lucid as the different stages reached in each forum were identified. It was possible to see that the potential is high but it is dependent upon many variables, such as age, ability, subject, teaching presence and social background.

The Ethics and Philosophy group had a high number of females, the age group was higher than the others, the subjects drew intense interest and the teaching presence was exemplary. The potential of the community to engage students in challenging debates and get them to write their ideas out clearly was evident in this forum. The

potential of the community to provide opportunities to build relationships, organise and internalise values connected with the sensitive nature and strong beliefs of gifted learners (Colangelo, 2002; Whybra, 1992) was also evident in the Ethics and Philosophy forum. The other three forums were not able to make use of this potential fully. However, each forum seemed to be serving a different purpose. Depending on what a learner was looking for they could easily shop around and be part of a forum they felt worked best for them. For example, the Reading Group may not have exhibited the higher stages in the conceptual dimension but it certainly helped the participants to reach out to other venues like creative writing. The General Debates forum was serving a more social function but at the same time was a place where learners could become aware of new topical issues, albeit only at surface level. The members of the Astronomy and Space forum were younger but presumably given time would develop the higher order thinking skills if they continued to participate.

The next section addresses the overarching research question by reviewing the characteristics and needs of gifted learners and how the online community was able to accommodate them.

9.4 The Potential of the community

As was discussed earlier in Chapter 2, research has shown that certain characteristics of gifted and talented learners such as task commitment, above-average ability, creativity (Renzulli, 1977), perseverance and readiness to respond to challenge (Dyson, 2003), unusual curiosity and intensity, and a persistent and goal-directed nature (Clark, 2002) make them a particularly suitable group for engaging in technology-related

pedagogy – pedagogy such as the online community promoted by asynchronous discussion forums in this study.

Not all gifted learners have the same characteristics but there is a general consensus that they might have an exceptionally keen sense of humour, be active problem solvers, be intuitive and sensitive, be fast learners and able to think abstractly and recognise patterns, structures and relationships (Kanevsky *et al.* 1994 cited in Davies, 2001; Bruner, 1960; Renzulli, 1977). Gifted learners are able to recall knowledge from previous experiences more readily than average-ability learners. As a result they are capable of self-monitoring, self-reflecting and self-motivating (Munro, 2005). They thrive on opportunities to learn independently and can use reference material efficiently (Davies, 2001). They enjoy flexible environments but still require some direction (Feldhusen 1998).

These type of characteristics are help define the needs of some gifted and talented learners. According to Wybra (1992) if these needs do not get channelled properly the gifted learners *might*:

- feel out of step with their time, peers and even family;
- feel bewildered;
- experience deep frustrations and problems of adjustment;
- feel acutely sensitive, lonely and intellectually isolated;
- become prematurely aware of problems without the emotional maturity to cope with them (Whybra, 1992).

The heightened self-awareness and large accumulation of emotions that have not been brought to consciousness (Clark, 2002) can lead the gifted learners to experience a social

isolation caused by the absence of a suitable peer group with whom to relate (Gross, 1998; Jesson, 2005; Kulik and Kulik, 1982, 1984).

As discussed earlier, the needs of gifted and talented learners are varied, as are the strategies employed to try to meet them. Most of the current approaches are classroom based (differentiation through enrichment, acceleration or curriculum compacting). Although the use of ICT-based differentiated tasks within the classroom has been hailed with enthusiasm, their efficient use has been dependent on many factors (school policy, teacher efficacy, time space).

The aim of this study was to investigate what potential an online community of inquiry promoted by asynchronous discussion forums might have for meeting the needs described above. It was concluded that the community did indeed have a lot of potential to meet the need of gifted and talented learners for the company of similar ability peers, to express their giftedness, to develop higher order thinking skills (Carder, 1999; Schofield and Hotulainen, 2004). It is, however, essential to remember that even though the potential was there, how much of it was actually used depended on the individual needs and/or participation. Some of the younger members had more needs but as they grew older they did not require as much support and therefore withdrew their participation considerably.

Building on the above-mentioned characteristics, the next section addresses the overarching research question and summarises how some needs of gifted learners may be potentially met by their participation in an online community.

9.5 How the online community could meet the needs of gifted learners

This section describes what aspects of participation in the discussion forums led to an environment which fostered some of the characteristics of gifted learners and gave them opportunities for developing them, thus meeting their needs.

9.5.1 The need to have the company of similar-ability peers

The connectivity feature of the forums allowed gifted learners of similar ability to come together in an online space not restricted by time or place. This gave them a chance to identify with their 'giftedness' and develop self-awareness. The sense of belonging to a community that emerged from the collaborative nature of the interchanges could allow members to get support, make friends, share personal information and learn communication skills from the way others participated in the activities. Their characteristic attitudes of being open to new ideas and being perceptive and responsive to feelings and to others could be developed because here they felt able to reveal their inner selves and their ambitions in a safe risk-free environment.

Since gifted learners demonstrate a high level of language development and verbal ability, have extensive vocabulary and are often early or avid readers (Clark, 2002; Gross, 1998; Renzulli *et al.* 2002; Terman and Oden, 1947), reading or posting messages in discussion forums may come more easily to them than average-ability learners.

The company of similar or higher-ability peers, however, could also lead to self-evaluation which could end up intimidating some of the less-confident members. However, with their persistent natures it is possible that they could still learn skills from the modelling processes of the tutors and the higher-ability members and become more confident.

9.5.2 The need to develop higher order, critical thinking skills

The topics discussed in the debates had the potential to promote broader synthetic views by examining real-life problems. The heightened capacity of gifted learners to recognise diverse relationships and integrate ideas across disciplines, reasons things out, comprehend meanings and make logical associations (Renzulli *et al.* 2002) could be nurtured by the asynchronous nature of the discussion forums which fostered reflective inquiry and metacognition. This evaluative approach towards self and others (Clark, 2002) could lead to an awareness of their own strengths and weaknesses. The resulting challenging situations could nurture their need to be kept stimulated.

Messages from the tutors (experts or facilitators) or other higher-ability members modelled processes required for critical evaluation and could allow them to develop their own skills. By getting opportunities to externalise their own thoughts in messages they could develop their thinking skills in a structured yet flexible environment. The tasks and time constraints set by the tutors could provide direction without limiting them. Instead further analytical, creative and practical thinking skills could be developed by persuading the learners to look for solutions to problems such that more breadth and depth was possible. The community had the potential to nurture their ability for abstract thinking, vivid imagination, recognising patterns, structure and relationships – for example the Astronomy and Space simulations.

9.5.3 The need to work independently in groups or individually

The asynchronous nature of the discussion forums fostered collaboration, which allowed gifted learners chances to develop their characteristics of self-motivation, self-

direction and self-monitoring; skills that would make them life-long learners and effective leaders (self-confident, self-sufficient and flexible). The community had the potential to nurture their ability to work intuitively and to acquire, integrate, retain and retrieve information or skills (Clark, 2002) by participating in topics of their own interest. They had opportunities to learn how to gain access to and process information and make informed decisions (Clark, 2002) increasing their ability to feel empowered and become responsible for their own learning.

The next section explores the implications these findings may have and how the gifted education community might respond to them.

9.6 Implications for teaching and policy for gifted learners

This section first discusses how the potential of an online community of inquiry could possibly be used as an additional supporting feature to meet the needs of gifted and talented learners as wider-school pedagogy (Section 9.6.1). It then conceptualises the community as a powerful learning environment (Section 9.6.2). Mention 9.6.3?

9.6.1 Wider-school pedagogy

Gifted education is an integral part of the general education policy in England, an integrated approach which aims to keep gifted learners together with their peers as much as is possible. However, according to Eyre (2004), in the English model (discussed on p.77-87) '... integrated education does not suggest that all provision for gifted pupils should be delivered in the regular classroom or indeed in the regular school. Just most of

it. When specialist provision is needed then it must be made available, and lack of availability in school should not be a barrier to the progress of the individual' (p.1).

This implies a focus on wider schooling with the host school being only one part of the education process. Effort should be made by the host schools to provide different ways to meet the needs of gifted learners which could include personalising the curriculum, similar-ability or mixed-ability grouping, acceleration or differentiation within lessons. This sort of provision should be available mostly in a regular classroom with some out-of-school and intra-school provision for younger gifted children, but as they get older and more advanced additional assistance from outer-school providers should be sought; especially for the 14-19 year-olds, when personal pathways should be emphasised to meet personal needs. Thus the English model of gifted and talented education argues that provision for gifted children should be made in ordinary schools as part of the day-to-day educational offer, but that this core provision should be supplemented by access to enhanced opportunities offered both within and beyond the school. The National Academy for Gifted and Talented Youth played a leading role as the out-of-school provider, creating opportunities according to student demand. One of the opportunities offered by the Student Academy of NAGTY was the various online discussion boards. As stated earlier, this research's contribution was to explore the potential of the online communities that were created through participation in these discussions forums as a way of meeting the needs of gifted learners. It was concluded that this form of e-learning as a form of provision for gifted and talented learners could be highly beneficial.

Online communities are a way of creating a space in which gifted individuals of secondary-school age, who might otherwise remain isolated and disconnected, can connect with others like themselves. This additional less-structured learning experience supplements the usual school-based experiences (Ng and Nicholas, 2007). Wegerif (2002) advocates the use of networks in collaborative knowledge creation in the following manner:

> networks can allow students to engage directly in knowledge creation with others who are not physically present. Given the apparent importance of collaborative learning this has significance for home education. Depending on how the activity is arranged, thinking together with others at a distance can be more motivating and can stimulate a higher quality of thought, than thinking together with others in the same classroom. (Wegerif, 2002:33)

The challenge of any educational context is to engage the natural thirst for knowledge and the curiosity that learning both presupposes and inspires. Because the community is external to the day-to-day environment of school, participants can experience a feeling of liberation through their engagement with it. This can be at the intra-personal level as well as the inter-personal level, and thus represents a very important source of expression for those gifted learners whose intellectual gifts may have not been fully recognised or exploited by previous educational opportunities. Learners can draw on material learnt in the schooling environment to contribute to their community posts.

The Department for Children Schools and Family describe thinking skills as: 'knowing how' as well as 'knowing what' – learning how to learn. Thinking skills such as information processing, reasoning, inquiry, creative and evaluative thinking are already embedded in the National Curriculum for England (Wegerif, 2002); however,

they need to be supplemented in order to make a solid impact on the lives of brighter students.

It was established in Chapter 3 that gifted students who generally learn and think faster than other students offer special challenges in critical thinking skills development as their gifts and talents might cause educators to believe that they are already good thinkers. The online community can be thought of as a support and resource for dialogues in which these types of thinking skills are taught, applied and learnt. The communication and thinking skills that the communal inquiry aims to foster can be highly adaptable to other areas and can contribute towards making the members life-long learners.

As an online pedagogy, the online community is well placed to educate students in at least two fundamental areas of educational value: substantial content and methodological practice. Gifted learners can not only be introduced to information of philosophical, ethical and historical importance but they can also learn through the forum how to engage in critical and evaluative practice. Because of the mature and serious approach of most gifted learners, the community can provide an excellent educational platform for gifted learners to become aware of the essentially active nature of learning. Debating and thinking about issues both philosophical and ethical can also help to contribute to their development not only as keen learners and educated students but as well-rounded human beings.

Building on expectations of today's adolescents as 'digital natives' (Prensky, 2001) who look to ICT as a means of engaging themselves in education and who are eager participants in virtual communities of learning and by providing the facilities to

participate in such communities in their own time the emphasis shifts to the learners: empowering them and giving them autonomy in their learning.

9.6.2 Powerful learning environment

The *14-19 and Digital Technologies: A review of research and projects* (Davies *et al.* 2005) asks some fundamental questions regarding the role young people should play in shaping their own education and the role of digital technologies to offer radically new approaches to the processes of teaching and learning in the development of a new learning environment for 14-19 year-olds. The report continues to suggest that 14-19 is a period of personal, social and psychological growth during which higher thinking skills and self-regulation, which are essential to lifelong learning, are being continuously developed. This development, the authors claim, can be fostered only by providing these young people with meaningful choices, challenging tasks and monitoring how they complete them. They go on to say that:

> To make sure more young people are successful in developing these attributes requires access to powerful learning environments which are often heavily reliant on digital technologies. (Davies *et al.* 2005:3)

Wegerif (2002) brings to light De Corte's (1990) characteristics of powerful learning environments which have a supportive role in reaching the modern aims of education. The characteristics of such environments seem to resonate with those of an online community of inquiry. For a learning environment to be powerful, De Corte contends that the learners need:

- an explicit explanation of the cognitive components of the task (a 'thinking' vocabulary);
- to observe an expert performing the task (modelling);
- to be given hints and feedback on their own performance (coaching);
- to be given direct support in the early stages of learning a task (scaffolding) and to move gradually towards self-regulation and autonomy (teacher-fading);
- the opportunity to articulate their cognitive and metacognitive strategies and to make comparisons with other learners (reflection);
- to explore, identify and define new problems in a domain and be shown how strategies acquired in one domain can be used to solve problems in another domain (transfer).

In this online community, the learners had the opportunity to observe experts (the tutors and the older students) modelling the use of appropriate vocabulary and techniques usually employed to analyse and evaluate discussions when presenting counter-arguments. Learners received plenty of feedback in the form of encouragement and the necessary support (scaffolding) at the beginning of the discussions with the tutor allowing autonomy and chances for self-regulation. The learners had opportunities to reflect and explore new ideas and become self-aware. It became evident that because these learners were engaged in tasks which they perceived as being important their self- worth was being nurtured. These characteristics mirror what De Corte calls a powerful learning environment.

Davies *et al.* (2005) list six guiding questions derived from recent research on constructivist and social constructivist learning theory for designing successful powerful

environments. In relation to the online community of inquiry they might be answered in the affirmative in the following manner.

Q1. Are the intended outcomes of the learning environment durable, flexible, functional, meaningful, generalisable and application-oriented?

There was evidence that members of this gifted community had meaningful experiences that would allow them to use their skills in many facets of their lives.

Q2. Are thinking, learning, collaboration and regulation skills being taught?

There was evidence that higher order thinking skills were being taught.

Q3. Is there a shift of focus towards more experiential learning: more active, cumulative, constructive, goal-directed, diagnostic and reflective learning?

Reflective inquiry is a characteristic of gifted learners, who are goal-oriented. Theywere provided with many different experiences of learning if they chose to participate. The constructivist student-centred approach was advocated as much as possible.

Q4. Is there a shift of focus towards more independent learning: more discovery-oriented, contextual, problem-oriented, case-based, socially and intrinsically motivated learning?

The intense debates on real-life problems, and application of simulations served to provide such opportunities.

Q5. Is there conscious attention for the gradual increase of independence according to the sequence of independent work, strategic learning and self-directed learning?

Efforts were made to enable this to happen by the tutors but they were only partially successful.

Q6. Is there modelling, external monitoring, scaffolding, metacognitive guidance, attention for self-evaluation, practice of skills, feedback and reflection?

There was evidence of the tutors modelling thinking processes, and monitoring and guiding deeper thinking processes.

Kulik and Kulik's (1982, 1984) meta-analyses have shown that grouping gifted students into a programme has a positive effect on their learning. Similarly, Jesson (2005) and Gross (1998) found many positive benefits of grouping students and recommended that gifted students spend the majority of their schooling with others of similar interests and abilities. This study has found that an online community has the potential to offer a convenient way for like-minded students to communicate in such groups.

9.6.3 Methodological contributions

The coding templates (relational, conceptual and pedagogical dimensions) developed as the theoretical tool for the qualitative content analysis for this research were specifically designed with the gifted learner in mind. Using the community of inquiry model (Garrison *et al.* 2000), integrating it with Bloom *et al.* (1956) and Krathwohl *et al.* (1964) hierarchical cognitive and affective skills, adding codes that were relevant to the characteristics of gifted learners made it particularly relevant for analysing online communities for the gifted. These templates are this study's methodological contribution as a way to provide an entry point to analyse the content of online dynamics of gifted communities for future researchers.

A limitation of the computer conferencing research is that much of the seminal work has focused on higher education and most of these studies did not attempt to analyse the educational quality of student participation or the factors that may influence it (Hiltz, 1990; Lauzon, 1992). This study will also add to the limited empirical research available on the potential of computers to enhance the development of higher order thinking skills of students in secondary education. Most of the research on learning in

online environments has been with higher education institutions with adults. Many of these studies have found that participants lack both the communication and thinking skills for successful completion of the courses. By learning these skills in the secondary schools, gifted learners, who are most likely to attend university, will already have these skills. The results may well be useful for educators who are formulating long-range technology plans of secondary-school age, keeping in mind the benefits these students would reap in working effectively in any future online courses in their higher education.

This case study also adds to the research on online community building or online discussion as it has explored several important issues, such as participation, interaction, group dynamics, emotions, levels of argumentation and personality (Angeli *et al.* 1998; Bullen, 1998; Fahy *et al.* 2000; Henri, 1991; Kanuka and Anderson; 1998; Marttunen, 1997; Webb *et al.* 1994; Zhu, 1996). These studies provide a rich source of anecdotal data and a model for the acquisition of more fundamental information. The longitudinal, largely descriptive, in depth nature of this case study provides additional valuable insights into the ebb and flow of community strength and the spirit of a large national gifted community (first in England).

9.7 Critical reflection on the study's limitations

There were several key methodological limitations and constraints to this study due to the selection of specific methodological approaches, theoretical viewpoints and the empirical focus. These limitations were considered at the design stage and reflect the fact that decision making in research involves compromise – aspects that have strengths in one respect often have weaknesses in others.

First, limitations relate to the subjective nature of the message coding (Section 9.7.1). However, several measures were taken to make the results as rigorous and trustworthy as possible: Intercoder reliability was established (see Appendix Q) before coding began; data were collected and analysed simultaneously and the reporting was done with sensitivity, candour and sincerity; sampling was made appropriate by allowing for duplication and reproduction of patterns over a period of a year; data was compared from various sources; faculty members and peers frequently helped to review the study to make sure there was structural congruence between research questions, the theoretical and philosophical assumptions and the components of the methodology.

Second, limitations relate to the availability of most of the evidence primarily from the 'vocal' participants (Section 9.7.2). However, the study was able to contribute to the research on 'lurkers' or 'silent' participants.

Further limitations are associated with generalisability (Section 9.7.3), availability of data (Section 9.7.4), case-study related research skills (9.7.5) and ambiguity of 'gifted and talented' definitions (9.7.6). Some of these limitations have been previously mentioned in appropriate areas . Here, they will be discussed in relation to the full thesis.

9.7.1 Subjectivity

The characteristic position of the researcher as the instrument of data generation in qualitative case studies has been a classic point of debate in the literature. How do researchers 'insulate' their personal predispositions from the selective gathering of information and its interpretation? How do researchers control for the effects of their own character traits on the participants? Positivists will argue that the purpose of the

scientific study is to remove such subjectivities by designing measures external to the researcher so that any person, howsoever eccentric, may gather the same data and, perhaps, arrive at the same conclusion as anyone else. Such removal of the researcher from the method would also protect against researcher effects on the participants because their primary engagement is with the non-human research instrument, not the researcher. The case-study methodology used in this study called for the 'generation' of data through observation of archived messages, interviews and questionnaires that could shed light on the research questions.

Most researchers would concur that the subjectivity limitation is unavoidable in such research, and may only be addressed through a reflexive approach as in this study (Hammersley and Atkinson, 1995). By clearly revealing the particular data-generation methods, acknowledging selective attention and biases and reflecting on the actual and potential effects of the researcher on the participants, the research product enables the reader to decide whether or not the findings are valid and reliable. Throughout my writing, I aimed to reveal any biases to the best of my abilities. My final intention is not to claim validity and reliability through objective measurement, but to admit subjective results for the reader to consider, accept or discard.

While the relational, conceptual and pedagogical dimensions developed from the community of inquiry model and the taxonomy of educational objectives provided a vehicle for assessing more than just the quantitative nature of the community participation, it imposed some constraints because of the subjective nature of the categories, especially the higher order thinking levels. These were often difficult to evaluate and interpret. Behaviours that are manifested lend themselves to a much easier

coding. The challenge remained to decipher and understand the latent processes or behaviours in higher order thinking. Identifying the cognitive skills at work in student postings can only provide a superficial understanding of the presence and frequency of such skills in message content. Recognising the different levels of discussions provided additional information but it was unclear what labels to provide to mixed postings because of frequent overlapping of levels. The analyses required an inordinate amount of time to complete and fully comprehend. Throughout this study, I was aware of the need to compare and evaluate the interpretation of participant messages from the various sources. Interviews and student and tutor perceptions derived from the questionnaire responses were particularly helpful here.

9.7.2 The participants

Although a major part of the active participation was attributed to members reading messages rather than posting them, most of the data for this study was only captured from students who were explicitly willing to participate by posting (the active-vocal members). The data from the case studies and the daily logging patterns of the readers plus questionnaire responses were, however, able to provide some evidence that the readers were following specific threads repeatedly, implying interest. It was anticipated that students would internalise the skills and strategies to which they were exposed on a social or interpsychological plane (Vygotsky, 1978). It had been hoped that interviews with some active-silent members would assist in the clarification of some of the grey areas. Unfortunately, this was not possible since NAGTY as I knew it closed its

doors in August 2007 and all my contacts were displaced to a new establishment called CfBT Education Trust Board.

9.7.3 Generalisability

Methodological problems and differences in approach in the studies that have attempted to analyse the educational quality of online discussions make comparisons with this case study difficult. Since every online community will have its own unique attributes and characteristics of the population, evaluation criteria would depend on a case-by-case basis.

The aim of this exploratory study was not universal generalisability since external validity (discussed on p.197) is complicated and difficult, but to undertake research that offered chances to reflect upon particular instances of educational practice (online discussions) which might present opportunities for cautious theory building. However, when theory building is a goal, Burgess (1984), among many others, points out that samples should be taken that are somewhat representative of the populations from which they come so that tentative propositions can be generated about the populations. Since the sample selected was not necessarily representative of the whole gifted population, it would be impossible (and unwise) to think of generating any universal theory. What might be fair to claim is that the knowledge generated by this research might also be true in a similar context: a community of secondary-age gifted and talented learners communicating online through asynchronous discussion forums. Langemeyer and Nissen (2005) refer to this as 'prototypical generalisability' where if someone were to repeat the study using the same sample criteria and method the outcomes might be the same. This

increases the reliability of the study, in terms of its replicability . Although methodological problems and differences in approach in the studies that have attempted to analyse the educational quality of online discussions make comparisons with this case study difficult, it might be possible for others to identify certain features of their 'own experience in the case and intuitively generalise from the case, rather than the sample (of one) being statistically representative of the population as a whole' (Stark and Torrence, 2005:34). This, the authors suggest is what might be called 'naturalistic generalisation' (Stake, 1995).

9.7.4 Data availability

One further limitation of this study was that some of the quantitative data (School and LEA data, Acorn information, family income, disability) was missing. The reason for this was that the time period over which the sample was taken: some of the questions relating to the data had not been added from the beginning. At the time NAGTY was still in its embryonic stages. This meant that the pioneer members were not asked all the questions the new members were being asked. This also applied to the data on 'posts' and 'reads' which might have led to a somewhat skewed analysis

The process of research design in this study was closely governed by principles which required attention to the research questions, respect for ethical guidelines and functionality within practical constraints. Processes of analysis were guided by complementary principles which stressed the importance of the links between claims and evidence, and the need to focus on issues relating to the research questions. Some suggestions are made for future research in the next section.

9.7.5 Case-study related researcher skills

Yin (2003:59) provides a basic list of required skills for a case-study researcher. These skills may include:

- the ability to *ask good questions* and interpret the answers;
- the ability to be a good '*listener*' and not be trapped by one's own convictions and prejudices;
- the ability to be *adaptive and flexible* so that diverse situations are seen as non-threatening, new opportunities;
- the ability to understand *the issues being studied* thoroughly regardless of what type of case study so that irrelevant events and information can be ignored and more attention can be paid to what is appropriate and pertinent to the case;
- the ability to remain *unbiased by preconceived notions* by remaining open-minded to evidence that may be contradicting theoretical evidence.

While it may not be possible to assess the investigative skills of a researcher, I believe my educational and professional background (MSc. in educational research methods and a teacher) had adequately provided me with a skill set which allowed me to be aware of the above-mentioned points. One way I tried to reduce my own biases – having been a teacher for gifted and talented students and having certain expectations - was by presenting my findings to colleagues who did not believe in 'giftedness' as an educational construct. They would offer alternative explanations and suggestions which made me aware of things that I might be taking for granted. I also tried to understand the

theoretical and policy issues concerning gifted and talented education to the best of my ability in order to make analytical judgements during the data-collection phase. I also felt that it was sometimes necessary to 'listen' to what was not being said, with an effort to understand the context from which the participants were perceiving the world. However, these were once again my own personal judgements, with no precise measure for accuracy. Stouffer (1941) compares 'accuracy of reporting' in terms of the flexibility of case-study researchers with that of the rigidity of statisticians. Seen as an 'indispensable supplement of the work of a statistician, even in situations where the value of the statistician's method is obvious' (p.356), Stouffer believes that case study research has great value in that it enables the researcher to concentrate on a few selected factors in a case which the researcher *thinks* are important. This allows a more detailed and intensive analysis which is not possible for a statistician.

9.7.6 Ambiguity of 'gifted and talented' definitions

As mentioned earlier (p.31, 37-47), there is much contention about what giftedness is and definitions and conceptions are numerous. The notion of intelligence is fluid and is still evolving. As a consequence, researchers in this field have used terminology that may have been popular at the time of their research or appealed to their own understanding of the concept. The repercussion of this lack of consistency for this study was that an accurate comparison between the gifted and talented learners who participated in the NAGTY forums and the several studies reviewed was not possible. The characteristics or traits of gifted students used in the study to build an argument for the use of asynchronous discussion forums as an out-of-school support for this population

were comprehensive of all studies regardless of how they chose to identify or describe their gifted learners.

9.8 Suggestions for future research

This study was a year-long snapshot of the participatory activities of a particular group of gifted learners within a national community of gifted and talented learners. The first study of its kind in England, since NAGTY was only established by the government in 2002 to develop, promote and support the provision of educational opportunities for gifted and talented children and young people aged up to 19. Prior to that it had not been possible to assemble such a community online. The online discussion forums had only just been introduced when I began this study. Everything and everyone was still operating at an experimental level. However, over the year of this research numerous changes were introduced.

Given the findings and analysis of this study a future study might examine the effect the growing membership has had on the members. The membership which was considerably smaller at the beginning when NAGTY was founded (approximately 40,000 members) but had burgeoned to 160,000 members by 1 September 2007, when the responsibility for the national programme for gifted and talented education was taken forward by the CfBT Education Trust. As discussed in Chapter 8, this increase in membership became a contentious issue in the course of the case study with both the learners and the facilitators. The mandatory requirement for all schools to have a register of gifted and talented students, and appoint gifted coordinators and the escalating national awareness of NAGTY and giftedness as a concept were some of the factors that had

contributed to this growth. This study found that the online community can be beneficial for gifted and talented learners. However, what happens if the membership grows too large? Would the learners still be able to have a sense of belonging or would they feel anonymous in the crowd? Would the numbers be too numerous to monitor? Perhaps all this has been and can be taken care of by dividing the community into smaller units.

A similar study to this research, but one which also includes interviews with some of the members, would bring to light more of the latent processes involved in developing critical thinking skills in an online environment through reading. Future research should include qualitative analyses of online discourse to better understand the extent to which personality may influence conceptual and relational structures of message content, as well as how course content and concepts are developed and applied in collaborative online discussion. One further research suggestion would be to do a comparative study of the use of the online environment by gifted and average-ability students. There is also a need for more attention to the definition and measurement of the giftedness construct. Does first language make any difference to deemed ability of students?

The awareness of giftedness has come a long way since I began this project. Attitudes towards identifying and providing for gifted learners are generally much more positive, so much so that league tables for gifted learners are now being proposed. It will still take a long time to fully comprehend how the education community can best serve this particular population, keeping in mind that some gifted children from ethnic and lower socio-economic backgrounds might need special attention.

Presently, provision for gifted children mostly consists of offering differentiation for gifted individuals; to teach advanced content or subject matter or to offer educational

and developmental experiences that expose them to greater breadth and depth of content. More than anything else gifted children need to be shown how to become more self-sufficient learners by teaching them how to learn. In the new economic climate, transferable thinking skills are required more than content knowledge or task-specific skills. As one of the strategies to meet the varied needs of gifted individuals, e-learning environments may have a genuine role to play in helping them develop their understanding of complex concepts in an informal setting. School lessons are restricted by class sizes and deadlines in a way that e-learning environments are not. Though a teacher may wish to spend time reflecting on issues, this may simply be impractical. This is where the e-learning environment of an online community can step in to lend assistance. Participants in learning need lateral breadth alongside vertical depth. The *collaborative ethos* with which members of the community can engage in the learning process can provide a cooperative sense of learning through a communal sense of inquiry. This lateral aspect is essential to successful learning, and represents a move away from a top-down linear approach; one that often restricts learning opportunities to mere 'reception' of information.

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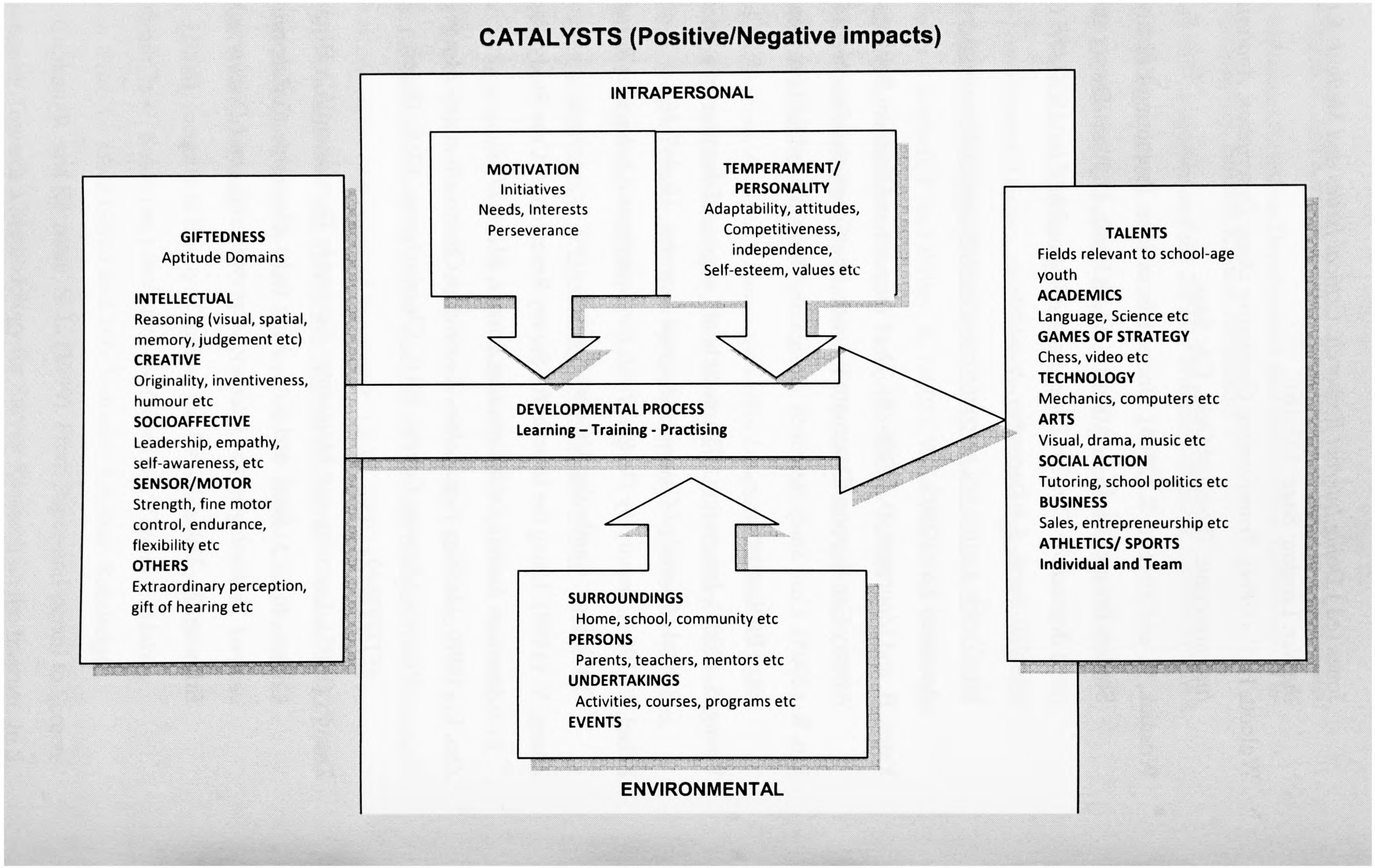
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Appendices

Appendix A: Differentiated Model of Giftedness and Talent (Gagné, 1997)



Appendix B: Timeline to show the development of attitudes, policies and provision in England (Adapted from Campbell *et al.*2004)

YEAR	TREND
1960	Intelligence testing was abandoned in most local authorities and access to selective tracks in comprehensive schools came to rely more on teacher recommendation. Children of middle class parents increased their representation in selective tracks to the disadvantage of children from the working class (Ford, 1969; Floud and Halsey, 1957)
1978	Low expectations at the classroom and school level, (DES 1978; HMI 1992; OFSTED 2003). Unenthusiastic attitudes of teachers and Local Education Authorities. • Lack of confidence to challenge able students • Low priority; managing behaviour and other pupils came first (Eyre, 1997:6; House of Commons 1999, Para 43, Para 50).
1998	Special provision for gifted and talented pupils seen as elitist in academic discourse (Ball *et al.* 1996) Government funding was disproportionately accessed by professional classes (Edwards *et al.* 1989) English social pressures - parental anxiety about provision in mainstream schools led to demand from the professional classes for private schools (Adonis and Pollard, 1998) or selective schooling

1999 2001 2002	House of Commons Select Committee (1999) examined issues associated with 'highly able children' and made recommendations about policy and practice which included: • generic funding of schools, • all national initiatives to include a strand for gifted and talented pupils • OFSTED to provide guidelines and check up on them • Each school to appoint a gifted and talented coordinator, • Initial teacher training to put emphasis on teaching practices for gifted and talented pupils, curriculum enrichment, partnerships between schools and other agencies, such as universities, out of school provision, and improved use of ICT. Green Paper: Schools Building on Success (DfEE, 2001) committed itself to including support for gifted and talented students in all its school education strategies New Labour Government's agenda for social inclusion inspired the following initiatives: EiC (Excellence in Cities) initiative to improve quality of education in urban areas- included specific targeting of gifted and talented pupils. (DfES, 2002) National Academy for Gifted and Talented Youth (NAGTY) established at the University of Warwick provided the organisational mechanism for leading, delivering, and supporting the delivery of, the policy into the system by providing services for students, teachers and opportunities for research - into a unified academy. Its work was supported by the government through an expanded Gifted and Talented Unit at the Department for Education and Skills.
2003	OFSTED judged provision for gifted pupils as unsatisfactory in 1 in12 schools citing lack of: identification and assessment procedures, schemes of work and consistency (OFSTED, 2003)
2004-present 2008	The English model of Gifted and Talented Education (Eyre, 2004) 'Personalisation' policy (Leadbetter, 2004, DfES, 2004). National register for Gifted and talented established. Coordinators for Gifted and Talented appointed at schools.

Community of inquiry (Garrison *et al.* 2000)	The affective domain (Bloom *et al.* 1964)	The relational dimension
Categories from coding template	Levels	Stages of thinking
Affective **Emotional expression** Emoticons Use of humour **Self disclosure**	**Receiving** Awareness, willingness to receive, and controlled or selected attention.	**Stage 1: Receiving** **Listening to others with respect** Asking questions Continuing a thread Quoting from others' messages
Interactive **Open communication** Risk-free expression Continuing a thread Quoting from others' messages. Referring explicitly to others' messages Asking questions Complimenting, expressing appreciation Expressing agreement	**Responding** Active Participation Willingness to respond	**Stage 2: Responding** **Active Participation** Willingness to respond Display of emotions Self disclosure Using first name Showing solidarity with the group
	Valuing Recognition of the value of something	
Cohesive **Group cohesion** **Encouraging collaboration** **Vocatives** **Addresses or refers to the group using inclusive pronouns** **Phatics, salutations**	**Organization** Organizes values into priorities by contrasting different values: comparing, relating, and synthesizing values.	**Stage 3: Valuing** **Sensitivity** Recognizing new knowledge Helping others Strong beliefs Persistence
		Stage 4: Organisation Sense of responsibility Recognising need for balance between freedom and responsible behaviour Accepting ethical standards Prioritising time effectively between work/family
	Internalization of values A value system that controls their behaviour consistently	**Stage 5: Internalization of values** Change of behaviour Self reliance in independent work Cooperative when working with others Values people for what they are

Appendix C: The relational dimension

Community of inquiry (Garrison *et al.* 2000)	The cognitive Domain (Bloom *et al.* 1956)	The conceptual Dimension
Categories from coding template	Levels of thinking	Stages of thinking
Triggering Event (Evocative) Recognising the problem Sense of puzzlement	**Knowledge** Recall of information Recognition of problem	**Stage 1: Knowledge Exploration** Triggering events Information exchange Recognition of problem Adds to knowledge
Exploration (Tentative) Divergence - within the online community Divergence - within a single message Information exchange Suggestions for consideration Brainstorming Leaps to conclusions	**Comprehension** Interpretation of information based on prior learning Grasping meaning	Discussion level 1 **Stage 2: Comprehension** Grasps meaning Follows instructions Expresses views Responds to individuals
Integration (Provisional) Convergence—among group members Convergence—within a single message Connecting ideas, synthesis Creating solutions	**Application** Using newly learned information in a new situation	Discussion level 2 **Stage 3: Application** Negotiates meaning / co-constructs knowledge Disagreement Agreement Argument not supported Agrees with comments Supported with own views Takes discussions forward Supported with comments
	Analysis Breaking down information to show understanding	Discussion level 3 **Stage 4: Analysis** Logical ordering of argument Agreement + Disagreement Systematic and well-supported arguments
Resolution (Committed) Vicarious application to real world Testing solutions Defending solutions	**Synthesis** Bringing things together from various sources to form a new product	**Stage 5: Synthesis** Creating solutions Connecting ideas from various sources Producing new or original design/idea/argument Summarising and proposing a solution
	Evaluation Judging the value of material e.g. novel, poem.	**Stage 6: Evaluation** Judging: compares, appraises, concludes, criticises Questioning evidence provided for argument Recognising subjectivity / making reasoned choices

Appendix D: The conceptual dimension

Community of inquiry
(Garrison *et al*. 2000)

The pedagogical dimension

Teaching presence

Categories from coding template

Direct instruction
Instructional management
Present content/questions.
Focus the discussion on specific issues
Summarize the discussion
Confirm understanding through assessment
explanatory feedback
Diagnose misconceptions.
Inject knowledge from diverse sources
Respond to technical concerns.

Facilitating discourse
Building understanding

Sharing personal meaning
Defining and initiating discussion topics
Identifying areas of agreement/disagreement
Seeking to reach consensus/understanding .
Setting climate for learning .
Drawing in participants, prompting discussions

Instructional design and discourse
Organisation
Direct instruction

Focussing discussion
Setting curriculum
Designing methods
Utilizing medium effectively.
Establishing netiquette

Modified categories

Direct instruction
Instructional management

Background information about subject
Expectations

Facilitating discourse
Building understanding

Asking leading questions
Correcting someone's response and keeping discussion on course
Summarizing discussion and asking more leading questions
Encouragement (general and inviting participants to take a leading role)

Instructional design and discourse
Organisation
Direct instruction

Reinforcement of rules
General programme questions

Appendix E: The pedagogical dimension

Appendix F: Focus group meeting questions

NAGTY
Wed 26 July 2006
Meeting with the study group moderators

1. Introductions (advice about the tape recorder)

2. Explain the informal structure of the discussion.

3. Questions:

- Do you get a sense of being part of a community? In what way?
- Have you met any of the NAGTY members? If yes, does this affect your online relationship in any way?
- Do you get to chat further with some members via email?
- How do you feel the forums contribute to the needs of gifted and talented pupils? What is their purpose?
- What kind of relationship do you feel you have with the members?
- Do you feel there is any kind of knowledge construction going on?
- Do you feel there is any kind of scaffolding going on?
- The Live Discussions are an excellent chance for a chat with the experts; what do you think more people do not get involved?
- Does the asynchronicity bother you or the study group members? How? Can you give me some examples?
- Can you give me any examples of student-moderator relationships that you cherish?
- What are your feelings about the increasing numbers of NAGTY?
- Does this affect you as a moderator or your study groups in any way?
- What is your ultimate aim- to get more members, to get more posts?

Appendix G: Letter introducing the researcher to the online members

Subject: **Win a £50 Amazon voucher!**
Dear Student

I am a research student at the University of Oxford and I would like your help. Please take a few minutes to complete the following questionnaire. The purpose of this questionnaire is to obtain your input in researching whether and how the NAGTY discussion forums are meeting your needs as a Gifted and Talented student.

Simply respond to each question by selecting an option with a mouse click.

Your responses will be kept confidential and anonymous, and your participation is completely voluntary. You may choose to withdraw at any time.

If you have questions about this research, contact Juss Kaur at 07946 751 384 or jussrani@yahoo.com

Thank you very much for your help; it is much appreciated.
On successful completion of the questionnaire, your name will be entered in a draw for a £50 Amazon voucher. The winner will be notified by email before March 20, 2007.

Just click on the following link and complete the survey.

http://www.surveymonkey.com/s.asp?u=59653172040

All replies have to be in before Friday March 9, 2007

Many thanks

Juss Kaur

Doctoral Candidate
Department of Educational Studies
University of Oxford
15 Norham Gardens
Oxford
OX2 6PY

Appendix H: The online questionnaire

SHINE : SHOW YOUR TRUE COLOURS

Exit this survey

1. Participation: Reading/Posting

1. Reading other posts

Choose all the options that may apply to you

- [ ] A. I love reading well thought out messages
- [ ] B. As I read messages, often my own views on a certain topic change
- [ ] C. I am very motivated by what I read
- [ ] D. I have not read any messages
- [ ] E. Whenever I read about something I discuss the issues further with others like my family, school friends and teachers
- [ ] F. Even though some discussions are hard to follow I love to read them
- [ ] G. Reading other people's posts has helped me to improve my own style of thinking things out
- [ ] H. I feel that I learn a lot from just reading the posts
- [ ] I. I am quite shy to post
- [ ] J. Other (please specify)

2. I do not post a message because:

Choose all the options that best describe how you feel

- [ ] A. I feel intimidated by the messages already posted
- [ ] B. I feel intimidated because of the large audience
- [ ] C. There are too many female contributors and I am a male
- [ ] D. There are too many male contributors and I am a female
- [ ] E. I am too young compared to others on the forum
- [ ] F. I am too old compared to others on the forum
- [ ] G. I feel that I don't need to post
- [ ] H. Other (please specify)

3. When I do post a message:

Please choose all the statements that may apply to you

- [ ] A. I get discouraged when my message does not get any response
- [ ] B. I do not care if any one replies as long as I get my opinion across
- [ ] C. As I write I find myself thinking more clearly than when I speak
- [ ] D. I often discuss issues with others (friends; teachers: in class; or family members) before I decide to post
- [ ] E. I find it easier to state my viewpoints in the online environment compared to face-to-face discussion(s)
- [ ] F. I enjoy getting messages back that challenge my opinions
- [ ] G. The process of posting helps me to learn how to think and write carefully
- [ ] H. Other (please specify)

Next >>

SHINE : SHOW YOUR TRUE COLOURS

Exit this survey

2. Community/Membership

1. Sense of community

Please choose one option from each row which indicates the extent to which each of the following statements apply to you

	Not at all	Somewhat	Quite a bit	Very much
A. I feel like I belong to a community	○	○	○	○
B. There is a cooperative sense of learning within the forums	○	○	○	○
C. I find the forum atmosphere to be friendly and approachable	○	○	○	○
D. I can get get help from the community members if i need it	○	○	○	○
E. There is a lack of communication between the community members	○	○	○	○
F. Whenever I find something new about the topic we are discussing I share it with other community members	○	○	○	○
G. I like the opportunity to view and share opinions of other gifted and talented students	○	○	○	○
H. I am proud to be a member of the gifted community	○	○	○	○
I. When someone asks for help I ignore it even if I know the answer to their question	○	○	○	○

2. My engagement with the forums:

Please choose one option from each row which indicates the extent to which the following statements apply to you

	Not at all	Somewhat	Quite a bit	Very much
A. Helps me with my schoolwork	○	○	○	○
B. Has helped me to become more confident at school	○	○	○	○
C. Has helped me to accept myself as someone with more intense interests	○	○	○	○
D. Has helped me realise that I am not as clever as I thought i was	○	○	○	○
E. Has offered me challenge that I couldn't find at school	○	○	○	○

<< Prev Next >>

SHINE : SHOW YOUR TRUE COLOURS

Exit this surv

3. Meeting Needs

1. The online community meets my needs as a gifted and talented learner by:

Please choose all the options which best show how you feel.
If there is something missing, please specify!

- ☐ A. Providing me with the opportunity to be in the company of other like minded individuals
- ☐ B. Providing me with the opportunity to further my special interests
- ☐ C. Providing me with the opportunity to debate with others
- ☐ D. Providing me with a forum where I can freely share my ambitions
- ☐ E. Providing me with an opportunity to learn to reason
- ☐ F. Providing me with an opportunity to work more on my own
- ☐ G. Providing me with an opportunity to learn from others who are smarter than I am
- ☐ H. None of the above
- ☐ I. Other (please specify)

<< Prev Next >>

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Exit this sur

4. Instructor role

Please read each statement and then choose the options which best show how you feel.
If there is something missing please specify!

1. Tutor/Instructor role

- [ ] A. The questions asked by the tutors are too difficult
- [ ] B. The questions asked by the tutors are very helpful
- [ ] C. I feel that the tutor is like a role model for me because he/she is an expert in the subject of my interest
- [ ] D. When I feel confused about something I feel like I can ask my tutor(s) for help
- [ ] E. I am not comfortable asking any questions
- [ ] F. The tutors(s) encourage me to think
- [ ] G. When the tutor summarises all the previous messages I find it very helpful
- [ ] H. The tutors encourage us to take leading roles
- [ ] I. Other (please specify)

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5. Logging in patterns

1. Please choose the option that best describes your logging in pattern(s)

	I usually log in:	Number of times I log in:	When I log in to the forums I usually end up reading:	The time I spend on th forums is between:
Choose one option from each drop down menu				

2. Do you belong to any non-NAGTY online forums?

- [ ] A. No
- [ ] B. If Yes (please specify)

3. Which of the following groups do you participate in?

A Ethics and Philosophy
B Reading Group
C Science (previously Astronomy)
D General Debates
E Others (Please specify)

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6. Additional Comments

1. Please take a few moments to add any other comments that you think are relevant to any aspect of the discussion forums.

<< Prev | Next >>

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7. Thank you

Your participation in this survey is greatly appreciated. Thank you for your kind help.

<< Prev | Finished! Thank You!!>>

Appendix I: The national secondary age gifted and talented population: ethnic background

	Gifted and Talented Pupils	Composition of G&T group (%)
Year 8		
White		
White British	54,903	83.1
Irish	220	0.3
Traveller Of Irish Heritage	6	0.0
Gypsy / Roma	21	0.0
Any Other White Background	1,304	2.0
Mixed		
White and Black Caribbean	758	1.1
White and Black African	199	0.3
White and Asian	477	0.7
Any Other Mixed Background	716	1.1
Asian		
Indian	1,487	2.3
Pakistani	1,166	1.8
Bangladeshi	583	0.9
Any Other Asian Background	478	0.7
Black		
Black Caribbean	764	1.2
Black African	880	1.3
Any Other Black Background	223	0.3
Chinese	365	0.6
Any Other Ethnic Group	512	0.8
Information Not Obtained	487	0.7
Refused	523	0.8

Source: National Statistics Bulletin (DfES 2007)

*The national gifted and talented population includes pupils who are under-achieving and may not be demonstrating their ability through attainment measures; it also includes pupils who demonstrate talent in areas requiring Visio-spatial skills or practical abilities, such as in drama or art.

** The 2006 Year 8 cohort is used for analysis of the gifted and talented population

Appendix J: Breakdown of the ethnic groups for the sample

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		66	10.1	10.1	10.1
	Asian or Asian British-Bangladeshi	2	.3	.3	10.4
	Asian or Asian British-Indian	22	3.4	3.4	13.8
	Asian or Asian British-Pakistani	8	1.2	1.2	15.0
	Black or Black British-African	8	1.2	1.2	16.3
	Black or Black British-Caribbean	3	.5	.5	16.7
	Chinese or Other Ethnic Background-Chinese	8	1.2	1.2	17.9
	Mixed-White and Asian	5	.8	.8	18.7
	Mixed-White and Black African	3	.5	.5	19.2
	Mixed-White and Black Caribbean	4	.6	.6	19.8
	Not Selected	4	.6	.6	20.4
	Other Asian Background	9	1.4	1.4	21.8
	Other Ethnic Background	3	.5	.5	22.2
	Other Mixed Background	4	.6	.6	22.9
	Other White Background	12	1.8	1.8	24.7
	Prefer Not To Say	4	.6	.6	25.3
	White-British	479	73.5	73.5	98.8
	White-Irish	8	1.2	1.2	100.0
	Total	652	100.0	100.0	

Reading Group

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		30	7.1	7.1	7.1
	Asian or Asian British-Indian	16	3.8	3.8	10.9
	Asian or Asian British-Pakistani	7	1.7	1.7	12.5
	Black or Black British-African	5	1.2	1.2	13.7
	Black or Black British-Caribbean	3	.7	.7	14.4
	Chinese or Other Ethnic Background-Chinese	9	2.1	2.1	16.5
	Mixed-White and Asian	9	2.1	2.1	18.7
	Mixed-White and Black African	1	.2	.2	18.9
	Mixed-White and Black Caribbean	2	.5	.5	19.4
	Other Asian Background	8	1.9	1.9	21.3
	Other Ethnic Background	1	.2	.2	21.5
	Other Mixed Background	5	1.2	1.2	22.7
	Other White Background	5	1.2	1.2	23.9
	Prefer Not To Say	6	1.4	1.4	25.3
	White-British	310	73.3	73.3	98.6
	White-Irish	6	1.4	1.4	100.0
	Total	423	100.0	100.0	

Ethics and Philosophy

Astronomy and Space

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		11	1.4	1.4	1.4
	Asian or Asian British-Indian	41	5.2	5.2	6.6
	Asian or Asian British-Pakistani	11	1.4	1.4	8.0
	Black or Black British-African	7	.9	.9	8.9
	Black or Black British-Caribbean	2	.3	.3	9.2
	Chinese or Other Ethnic Background-Chinese	19	2.4	2.4	11.6
	Mixed-White and Asian	7	.9	.9	12.5
	Mixed-White and Black African	3	.4	.4	12.8
	Mixed-White and Black Caribbean	5	.6	.6	13.5
	Not Selected	3	.4	.4	13.9
	NULL	8	1.0	1.0	14.9
	Other Asian Background	10	1.3	1.3	16.2
	Other Black Background	1	.1	.1	16.3
	Other Ethnic Background	5	.6	.6	16.9
	Other Mixed Background	9	1.1	1.1	18.1
	Other White Background	10	1.3	1.3	19.3
	Prefer Not To Say	3	.4	.4	19.7
	White-British	625	79.5	79.5	99.2
	White-Irish	6	.8	.8	100.0
	Total	786	100.0	100.0	

General Debates

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		83	3.2	3.2	3.2
	Asian or Asian British-Bangladeshi	8	.3	.3	3.5
	Asian or Asian British-Indian	122	4.6	4.6	8.1
	Asian or Asian British-Pakistani	25	.9	.9	9.0
	Black or Black British-African	21	.8	.8	9.8
	Black or Black British-Caribbean	7	.3	.3	10.1
	Chinese or Other Ethnic Background-Chinese	56	2.1	2.1	12.2
	Mixed-White and Asian	24	.9	.9	13.1
	Mixed-White and Black African	11	.4	.4	13.6
	Mixed-White and Black Caribbean	15	.6	.6	14.1
	Not Selected	13	.5	.5	14.6
	Other Asian Background	24	.9	.9	15.5
	Other Black Background	5	.2	.2	15.7
	Other Ethnic Background	9	.3	.3	16.1
	Other Mixed Background	31	1.2	1.2	17.2
	Other White Background	42	1.6	1.6	18.8
	Prefer Not To Say	21	.8	.8	19.6
	White-British	2099	79.7	79.7	99.4
	White-Irish	16	.6	.6	100.0
	Total	2632	100.0	100.0	

Appendix K: Gross family income breakdown

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		444	68.1	68.1	68.1
	£20,000 or below	32	4.9	4.9	73.0
	£20,001 - £25,000	14	2.1	2.1	75.2
	£25,001 - £30,000	15	2.3	2.3	77.5
	£30,001 - £40,000	28	4.3	4.3	81.7
	£40,001 and above	83	12.7	12.7	94.5
	Not Specified	36	5.5	5.5	100.0
	Total	652	100.0	100.0	

Reading Group

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		261	61.7	61.7	61.7
	£20,000 or below	9	2.1	2.1	63.8
	£20,001 - £25,000	11	2.6	2.6	66.4
	£25,001 - £30,000	19	4.5	4.5	70.9
	£30,001 - £40,000	22	5.2	5.2	76.1
	£40,001 and above	77	18.2	18.2	94.3
	Not Specified	24	5.7	5.7	100.0
	Total	423	100.0	100.0	

Ethics and Philosophy

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		144	18.3	18.3	18.3
	£20,000 or below	64	8.1	8.1	26.5
	£20,001 - £25,000	31	3.9	3.9	30.4
	£25,001 - £30,000	51	6.5	6.5	36.9
	£30,001 - £40,000	86	10.9	10.9	47.8
	£40,001 and above	218	27.7	27.7	75.6
	Not Specified	58	7.4	7.4	83.0
	NULL	134	17.0	17.0	100.0
	Total	786	100.0	100.0	

Astronomy and Space

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		1057	40.2	40.2	40.2
	£20,000 or below	229	8.7	8.7	48.9
	£20,001 - £25,000	99	3.8	3.8	52.6
	£25,001 - £30,000	136	5.2	5.2	57.8
	£30,001 - £40,000	226	8.6	8.6	66.4
	£40,001 and above	670	25.5	25.5	91.8
	Not Specified	215	8.2	8.2	100.0
	Total	2632	100.0	100.0	

General Debates

Appendix L: Acorn breakdown

Category	Group	Type
Wealthy Achievers	Wealthy Executives	01 - Affluent mature professionals, large houses
		02 - Affluent working families with mortgages
		03 - Villages with wealthy commuters
		04 - Well-off managers, larger houses
	Affluent Greys	05 - Older affluent professionals
		06 - Farming communities
		07 - Old people, detached houses
		08 - Mature couples, smaller detached houses
	Flourishing Families	09 - Larger families, prosperous suburbs
		10 - Well-off working families with mortgages
		11 - Well-off managers, detached houses
		12 - Large families & houses in rural areas
Urban Prosperity	Prosperous Professionals	13 - Well-off professionals, larger houses and converted flats
		14 - Older Professionals in detached houses and apartments
	Educated Urbanites	15 - Affluent urban professionals, flats
		16 - Prosperous young professionals, flats
		17 - Young educated workers, flats
		18 - Multi-ethnic young, converted flats
		19 - Suburban privately renting professionals
	Aspiring Singles	20 - Student flats and cosmopolitan sharers
		21 - Singles & sharers, multi-ethnic areas
		22 - Low income singles, small rented flats
		23 - Student Terraces
Comfortably Off	Starting Out	24 - Young couples, flats and terraces
		25 - White collar singles/sharers, terraces
	Secure Families	26 - Younger white-collar couples with mortgages
		27 - Middle income, home owning areas
		28 - Working families with mortgages
		29 - Mature families in suburban semis
		30 - Established home owning workers
		31 - Home owning Asian family areas
	Settled Suburbia	32 - Retired home owners
		33 - Middle income, older couples
		34 - Lower income people, semis
	Prudent Pensioners	35 - Elderly singles, purpose built flats
		36 - Older people, flats
Moderate Means	Asian Communities	37 - Crowded Asian terraces
		38 - Low income Asian families
	Post Industrial Families	39 - Skilled older family terraces
		40 - Young family workers
	Blue Collar Roots	41 - Skilled workers, semis and terraces
		42 - Home owning, terraces
		43 - Older rented terraces
Hard Pressed	Struggling Families	44 - Low income larger families, semis
		45 - Older people, low income, small semis
		46 - Low income, routine jobs, unemployment
		47 - Low rise terraced estates of poorly-off workers
		48 - Low incomes, high unemployment, single parents
		49 - Large families, many children, poorly educated
	Burdened Singles	50 - Council flats, single elderly people
		51 - Council terraces, unemployment, many singles
		52 - Council flats, single parents, unemployment
	High Rise Hardship	53 - Old people in high rise flats
		54 - Singles & single parents, high rise estates
	Inner City Adversity	55 - Multi-ethnic purpose built estates
		56 - Multi-ethnic, crowded flats

Appendix M: ACORN classifications for the forums

Category	Reading Group RG	Ethics & Philosophy E&P	Astronomy & Space A&S	General Debates GD	NAGTY
Wealthy Achievers	44.4 %	44.7 %	45.4 %	45.1 %	42.2 %
Urban Prosperity	10.6 %	11.8 %	8.8 %	9.8 %	9.8 %
Comfortably Off	25.9 %	27.9 %	28.6 %	26. 9 %	30.2 %
Moderate Means	5.7 %	5.9 %	7.9 %	7.8 %	9.3 %
Hard Pressed	6.7 %	7.6 %	6.2 %	7.5 %	8.5 %

Appendix N: Main admission criteria used for NAGTY membership

FORUM NAME	EVIDENCE FOR ADMISSION	TOTAL NUMBER	%
Reading Group (RG)	CATS	143	22
	MidYIS	63	10
	KS3	23	4
	GCSE's	16	3
	Non-Test	20	3
Ethics & Philosophy (E&P)	CATS	67	16
	MidYIS	46	11
	KS3	26	6
	GCSE's	18	4
	Non-Test	26	6
Astronomy & Space (A&S) (Science)	CATS	247	31
	MidYIS	112	14
	KS3	74	9
	GCSE's	45	6
	Non-Test	46	6
General Debates (GD)	CATS	820	31
	MidYIS	404	15
	KS3	222	8
	GCSE's	146	6
	Non-Test	133	5

A synthesis of the five most used types of admission criteria used for the members of the sample forums (Also see Chapter 5).

The highest incidence was for members of the sample forums being admitted on the basis of their CATS[RG 22 per cent (143); E&P 16 per cent (67); A&S 31 per cent (247); GD 31 per cent (820)]. The next highest incidence was the MidYIS scores [RG 10 per cent (63); E&P 11 per cent (43); A&S 14 per cent (112); GD 15 per cent (404)]. This was followed by the KS3 [(RG 4 per cent (23); E&P 6 per cent (26); A&S 9 per cent (74);GD 8 per cent (222)] and GCSE scores [RG 3 per cent (16); E&P 4 per cent (18); A&S 9 per cent (74); GD 6 per cent (146)]. A total of 175 (20 per cent) members had been admitted on the basis of non-test evidence [RG 3 per cent (20); E&P 6 per cent (26); A&S 6 per cent (46); GD 5 per cent (133)].

Appendix O: Acknowledgement of missing data

As has been mentioned earlier, there was some data missing as a result of questions that collect this data were only introduced at later stages than the rest. The following data were missing: For the RG forum:55 (8.4 per cent) members did not choose any school, 54 (8.3 per cent) members did not choose the LEA; 367 (55.7 per cent) members did not specify the method for admission. For the E&P forum:22 members(5.2 per cent) members did not choose any school, 21(5 per cent) members did not choose the LEA; 218 (51.5 per cent) members did not specify the method for admission. For the A&S forum:20 members(2.5 per cent) members did not choose any school, 16 (2 per cent) members did not choose the LEA; 66 (8.4 per cent) members did not specify the method for admission. For the D forum: 76 members(2.9 per cent) members did not choose any school, 74 (2.8 per cent) members did not choose the LEA; 750 (28.5 per cent) members did not specify the method for admission.

Data on whether the members had any disabilities had almost 97 per cent missing in all the forums, and therefore was not included. However, it did come to light that there were at least one blind/partially sighted and one other who had a specific learning disability in the RG forum. In the E&P forum there were at least 8 members (1 with Autistic Spectrum Disorder or Asperger's Syndrome, 1 with Deaf or Hard of Hearing and 4 with specified Hidden disabilities such as Dyslexia a and 1 wheelchair user and 1 other disability. In the A&S forum there were18 members who reported some form of disability (3 with Autistic Spectrum Disorder or Asperger's Syndrome, 1 with Deaf or Hard of Hearing, and 10 with specified Hidden disabilities such as Dyslexia or Diabetes, 3 with Other disability, special need or mental condition or mental difficulties and.1 member who used a wheelchair. In the D forum there were 57 members who reported some form of disability (8 with Autistic Spectrum Disorder or Asperger's Syndrome, 5 with Deaf or Hard of Hearing,29 with specified Hidden disabilities such as Dyslexia and Diabetes, 12 with Other disability, special need or mental condition or mental difficulties (12), 2 were either Blind or partially sighted (2) and.1 member who used a wheelchair.

Appendix P: Type of LEA (Local Education Authorities) attended by sample members

The table below shows the top five LEA that the members come from. Approximately 6 per cent of their members come from Hertfordshire [(RG 7 per cent (43); E&P 7 per cent (28); A&S 6 per cent (49); GD 5 per cent (141)]. Approximately 5 per cent of the members come from Derbyshire [(RG 2 per cent,(15); E&P 3 per cent (12); A&S 3 per cent (21);GD 3 per cent (76)]. Approximately 3 per cent of the members come from Hampshire 3 per cent [(RG 3 per cent (19); E&P 3 per cent (11); A&S 4 per cent (31); GD 3 per cent (71)]. Approximately 2 per cent of the members come from Oxfordshire [(RG 2 per cent (17); E&P 2 per cent (10); A&S 2 per cent (14); GD 3 per cent (66)]. All the forums (except E&P) had approximately 2 per cent of the members who come from Surrey [(RG 2 per cent (15), A&S 3 per cent (24), GD 2 per cent (64)]. In the E&P forum, it was the North Tyneside LEA which had 2.4 per cent (910) members.

FORUM NAME	LEA	TOTAL NUMBER	LEA%
Reading Group (RG)	Hertfordshire	43	6.6
	Hampshire	19	2.9
	Oxfordshire	17	2.3
	Surrey	15	2.3
	Derbyshire	15	2.3
Ethics & Philosophy (E&P)	Hertfordshire	28	6.6
	Derbyshire	12	2.8
	Hampshire	11	2.6
	North Tyneside	10	2.4
	Oxfordshire	10	2.4
Astronomy & Space (A&S) (Science)	Hertfordshire	49	6.2
	Hampshire	31	3.9
	Surrey	24	3.1
	Derbyshire	21	2.7
	Oxfordshire	14	1.8
General Debates (D)	Hertfordshire	141	5.4
	Derbyshire	76	2.9
	Hampshire	71	2.7
	Oxfordshire	66	2.5
	Surrey/Kent	64	2.4

The 5 main LEA from where the sample members come from

Code-ID	Codes for 'What is Betrayal?'	All Coded Segments	All Coded Segments	Disagreement
		Coder 1	Coder 2	
42	Showing solidarity with group	1	1	0
51	Strong beliefs	1	1	0
65	Sense of puzzlement	1	1	0
66	Recognition of problem	1	0	1
69	Disagreement with others' message + own views	1	1	0
74	Suggestions for further consideration	1	1	0
76	Further detailed message following previous one	1	1	0
89	Summarizing and proposing solution	1	1	0
96	Critical assessment of ideas/material/books etc	1	0	1
103	Encouragement	1	1	0
56	Recognises need for balance between freedom/responsible behaviour	2	2	0
87	Agreement+ Disagreement with supportive statements (Stage 3)	2	1	1
92	Connecting ideas from various sources	2	3	1
101	Summarising arguments and asking more leading questions	2	2	0
102	Answering someone's question directly	2	2	0
107	Background information about topic and expectations	2	5	3
70	Agreement with others' message + own views	3	1	2
48	Providing an answer	4	8	4
80	With supportive argument + comments taking discussion forward	5	3	2
71	Own view: I think; I believe; in my opinion	9	12	3
108	Asking leading questions	7	8	1
46	Quoting from others' message/Continuing a thread	11	11	0
		59	66	19
		Total Agreement	125 -19=106	
		Total Coded	125	
		Percent Agreement	106/125 x 100=85%	

Appendix Q: Coder agreement

Elaine

Ethics and Philosophy forum active silent member

		Action ASM	Total
		r	
Subject ASM	Criminality and determinism	6	6
	Eating Human remains	11	11
	Email addresses	1	1
	General Issues & Chat	4	4
	Goodbye Ben!	5	5
	July Essay Challenge (Deadline July 25th	2	2
	Media Microscope	1	1
	Question of the Month (April 2005)	45	45
	Question of the Month (August 2005)	20	20
	Question of the month (December 2004)	1	1
	Question of the Month (January 2005)	1	1
	Question of the Month (July 2005)	13	13
	Question of the Month (June 2005)	23	23
	Question of the Month (March 2005)	2	2
	Question of the Month (November 2005)	1	1
	Question of the Month (October 2005)	6	6
	Question of the Month (September 2005)	9	9
	Questionnaire Feedback	1	1
	Thoughts About an Outreach Event	13	13
	What makes human meat so different from	10	10
Total		175	175

Mike

Ethics and Philosophy forum active-vocal member

		Action		Total
		p	r	
Subject	Criminality and determinism	0	7	7
	Descartes: The Ontological Argument for	1	11	12
	Do animals feel?	0	5	5
	Eating Human remains	1	6	7
	Email addresses	0	2	2
	Essay Challenge!	0	3	3
	General Issues & Chat	0	4	4
	Goodbye Ben!	0	3	3
	Greetings Everyone	0	2	2
	Homework - what are your views?	0	1	1
	Human Purpose?	6	25	31
	Is there life after death?	0	1	1
	July Essay Challenge (Deadline July 25th	0	2	2
	Media Microscope	1	10	11
	Media Microscope II	0	15	15
	Media Microscope III	2	13	15
	Media Microscope IV	3	20	23
	Media Microscope V	0	8	8
	Media Microscope VI	0	7	7
	MM VII: Is prohibition morally wrong?	0	1	1
	Question of the Month (April 2005)	20	69	89
	Question of the Month (August 2005)	2	20	22
	Question of the month (December 2004)	0	3	3
	Question of the Month (December 2005)	3	23	26
	Question of the Month (February 2006)	0	7	7
	Question of the Month (January 2005)	0	2	2
	Question of the Month (January 2006)	1	15	16
	Question of the Month (July 2005)	2	14	16
	Question of the Month (June 2005)	9	31	40
	Question of the Month (March 2005)	0	2	2
	Question of the Month (May 2004)	0	1	1
	Question of the Month (November 2005)	2	11	13
	Question of the Month (October 2005)	13	31	44
	Question of the Month (September 2005)	1	15	16
	Questionnaire Feedback	0	1	1
	Should under 18s be recruited by the arm	0	3	3
	The Curious Case of July's Question of t	0	1	1
	Thoughts About an Outreach Event	0	4	4
	Topic Review for August 2004 - Computer	0	1	1
	Topic Review for November 2004 - Faceless	0	1	1
	What makes human meat so different from	1	10	11
	world religion	6	28	34
Total		74	439	513

Gill

Reading Group forum active-silent member

		Action ASM r	Total
	April 05: 'The Catcher in the Rye'	8	8
	April 05: 'The Heart is a Lonely Hunter'	5	5
	August 05: My Family and Other Animals	1	1
	August 05: The Fellowship of the Ring	1	1
	Being a judge for the Whitbread Book Award	I	1
	Book Suggestions	1	1
	Breaking the ice:D	1	1
	Creative Writing	8	8
	Discussion of School Literature	10	10
	Favourite book of all time	8	8
	February 05: 'Holes'	3	3
	Harry Potter and the Philosopher's Stone	5	5
	June 05: The No. 1 Ladies' Detective Age	1	1
	Literary Issues	1	1
	March 05: 'The Great Gatsby'	3	3
	March: 'Private Peaceful'	4	4
	Northern Lights	5	5
	Noughts and Crosses	2	2
	Online Reading Group Events	8	8
	Poetry	2	2
	Reading List	14	14
	September 05: Cry, The Beloved Country	1	1
	September 05: Things Fall Apart	1	1
	The Best Read	3	3
	The Curious Incident of the Dog in the N	2	2
	War Poetry	2	2
	Welcome	10	10
Total		111	111

Joan

Reading Group forum active-vocal member

		Action AVM		Total
		p	r	
Subject AVM	April 05: 'The Catcher in the Rye'	14	72	86
	April 05: 'The Heart is a Lonely Hunter'	0	2	2
	August 05: My Family and Other Animals	0	1	1
	August 05: The Fellowship of the Ring	0	1	1
	Being a judge for the Whitbread Book Awa	0	3	3
	Book Suggestions	0	2	2
	Breaking the ice	0	2	2
	Creative Writing	4	34	38
	December 05: Harry Potter and the Chamber	1	3	4
	December 05: The Subtle Knife	1	4	5
	Discussion of School Literature	0	5	5
	Emma	0	1	1
	February 06: Lucas	0	1	1
	February 06: Martyn Pig	0	1	1
	July 05: All Quiet on the Western Front	2	7	9
	June 05: The Hitch-Hikers Guide to the G	23	59	82
	June 05: The No. 1 Ladies' Detective Age	1	7	8
	Life of Pi	0	1	1
	Literary Issues	2	5	7
	May 05: 'Far From the Madding Crowd'	24	62	86
	May 05: 'The Joy Luck Club'	0	3	3
	Noughts and Crosses	0	2	2
	November 05: Boy	2	6	8
	November 05: Thursday's Child	0	4	4
	October 05: Cat's Eye	3	9	12
	October 05: Dracula	0	3	3
	Online Reading Group Events	3	29	32
	Poetry	0	1	1
	Reading List	5	38	43
	September 05: Cry, The Beloved Country	0	1	1
	September 05: Things Fall Apart	8	35	43
	The Best Read	0	1	1
	The Curious Incident of the Dog in the N	0	1	1
	Welcome	0	14	14
Total		93	420	513

Bob

Astronomy and Space forum active-silent member

		Action ASM	Total
		r	
Subject ASM	Ask an Astrophysicist service	1	1
	Astronomy Computer Sims (was Astronomy A	1	1
	Black Hole Hunt (was Astronomy ASG month	1	1
	How The Sky "Works" (was Astronomy ASG month)	9	9
	Image Processing (was Astronomy ASG month	16	16
	Impacts from Space (was Astronomy ASG month)	9	9
	Nature of the Universe	1	1
	Origins and Evolution of the Universe	7	7
	Space tourist (was Astronomy ASG monthly	2	2
	Suggest a Topic (Astronomy ASG)	15	15
	The Cassini Huygens Mission	4	4
	Using the Faulkes Telescope in Hawaii	3	3
	Welcome - Introduce Yourself (Astronomy	17	17
Total		86	86

Mark

Astronomy and Space forum active-vocal member

		Action		Total
		p	r	
Subject	Ask an Astrophysicist service	1	4	5
	Astronomy Computer Sims (was Astronomy ASG	10	26	36
	Black Hole Hunt (was Astronomy ASG month)	6	15	21
	Hollywood Goes to the Moon (was Astronomy	1	2	3
	How The Sky "Works" (was Astronomy ASG monthly)	0	2	2
	Image Processing (was Astronomy ASG mont	0	3	3
	Nature of the Universe	1	4	5
	Origins and Evolution of the Universe	1	4	5
	Our Future In Space (was Astronomy ASG m	0	2	2
	Space tourist (was Astronomy ASG monthly	0	1	1
	Suggest a Topic (Astronomy ASG)	5	6	11
	The Cassini Huygens Mission	2	2	4
	Using the Faulkes Telescope in Hawaii	3	17	20
	Welcome - Introduce Yourself (Astronomy	2	7	9
Total		32	95	127

Peter

General Debates forum active-silent member

		Action ASM r	Total
Subject ASM	Are children growing up too fast?	1	1
	Are top-up fees a good idea?	1	1
	Behavioural Science - Useful or Dangerous	1	1
	Better to have then loose or never have?	3	3
	Charities - which ones to support?	1	1
	Charity to begin with NAGTY!	2	2
	Communism	12	12
	Ecology vs Economy	1	1
	File sharing and mp3s.	2	2
	Food to spare?	1	1
	Fox Hunting	1	1
	How can we help the third world?	1	1
	How was the world created?	1	1
	If God exists then why do bad things sti	4	4
	Invasion of privacy?	2	2
	Life on another planet?	4	4
	Marriage for same-sex couples?	1	1
	MRSA	1	1
	Nuclear Power	1	1
	Personalised learning - the 'student voice'	1	1
	Political Correctness: going too far?	3	3
	Private schools	3	3
	Racism	2	2
	Rap music and its influence on society..	1	1
	Religion vs Science - which has the most	5	5
	Self-harm - a modern phenomenon?	2	2
	Sex education in schools	19	19
	Should abortion be allowed under all cir	5	5
	Should fatty foods be taxed?	1	1
	Should the age of consent be altered?	2	2
	Should voting be made compulsory?	2	2
	Student perspective on English in the 21	1	1
	What are the rights of a child?	6	6
	What is evil?	7	7
	What is there after death?	3	3
	Where did the universe come from?	3	3
	Why have we not heard from ET yet?	1	I
	Yob Culture...?	3	3
Total		111	111

Stephan

General Debates forum most active-vocal member

		Action		Total
		p	r	
Subject	Adoption for gay couples?	0	14	14
	Animal testing	11	82	93
	Are top-up fees a good idea?	0	12	12
	Armed police: an ethical dilemma?	0	2	2
	Asylum seekers and illegal immigrants	4	32	36
	Avian flu: the next epidemic?	0	15	15
	Better to have then loose or never have?	0	7	7
	Censorship or protection - do children h	0	9	9
	Charities - which ones to support?	2	37	39
	Charity to begin with NAGTY!	0	2	2
	Communism	13	95	108
	Corporal Punishment in Schools	0	11	11
	Death Penalty?	10	34	44
	Do all Religions lead to the same god?	1	15	16
	Do all religions ultimately lead to the	7	67	74
	Do you believe in fate?	6	39	45
	Does feminism have a role to play in the	0	13	13
	Ecology vs Economy	2	7	9
	Euthanasia	0	2	2
	Family and friends: who is more important	0	1	1
	Fathers For Justice	5	36	41
	Filesharing and mp3s.	0	1	1
	Firearms laws..	9	31	40
	Fox Hunting	47	197	244
	Global warming - what should we do?	8	66	74
	How can we help the third world?	2	14	16
	How important is a healthy diet -	0	6	6
	If God exists then why do bad things still happen	57	185	242
	Invasion of privacy?	4	16	20
	Is Capital Punishment a suitable response	20	78	98
	Is hope a good thing?	0	13	13
	Legal Age for Drinking	0	2	2
	Life on another planet?	10	64	74
	Life Sentence for Prisoners	10	42	52
	Marriage for same-sex couples?	1	10	11
	Maths theory	2	23	25
	MRSA	3	25	28
	New Disciplinary Rules and Guidelines	0	1	1
	NHS - should it be privatised?	6	51	57
	Peace in the Middle East	1	11	12
	Personalised learning - the 'student voi	0	2	2
	Political Correctness: going too far?	17	105	122
	Private schools	21	112	133
	Racism	0	7	7
	Rap music and its influence on society..	13	82	95
	Religion vs Science - which has the most	8	84	92
	Sex education in schools	0	3	3
	Should abortion be allowed under all cir	1	13	14

	Should fatty foods be taxed?	0	4	4
	Should smoking be banned in public place	2	19	21
	Should the UK adopt the new EU constitution	16	68	84
	Should voting be made compulsory?	0	2	2
	Should we arm the police?	2	15	17
	Smacking?	0	2	2
	Smoke and the city	1	20	21
	Student perspective on English in the 21	0	2	2
	Tabloid Newspapers	7	50	57
	Terrorism	3	23	26
	The Amazon Rainforest	2	34	36
	The Iraq War	15	81	96
	The media's influence on politics	0	14	14
	The monarchy	19	97	116
	The Veggie Option	0	18	18
	Vegetarianism	4	61	65
	What are the rights of a child?	0	2	2
	What is evil?	3	59	62
	What is there after death?	27	137	164
	Where did the universe come from?	18	81	99
	Would you choose life?	0	8	8
	Yob Culture...?	2	46	48
Total		422	2619	3041

Appendix S: Message posted by Mike in the Ethics and Philosophy forum

> I strongly believe that during a debate, one's argument must be consistent. To say at one time that
> (and I quote) 'If I am not right then I am not happy' only to say soon afterwards that you are happy to be searching, even if it leads to more questions, I see as a contradiction.

This is not a contradiction. I am *happier* to be searching for the right answer than to be stuck with a wrong answer. I would prefer to have the correct answer, but that is not always possible. In that case, I prefer either to simply to continue looking or to admit that I may never know, rather than settle for a definite answer which I do not feel is justifiable with the evidence I have. A state of continuing to search is not the same thing as being wrong. In my opinion, it is you who should be glad we are not in a court.

> Now, to equal merit?. Why can equal merit? not mean ?two choices which, at the time at which a decision is taken, seem to cause equal good?? If ?equal merit? is defined as such, then it is perfectly possible to have two choices of equal merit.

No, because 'good' is subjective. Good for who? Good how? You cannot quantify 'goodness' and so you cannot quantify the 'merit' of a choice. If you cannot quantify it, you cannot compare it accurately to any other choice. For two choices to be equal by *all* possible interpretations of 'good', they have to be *exactly* the same. If they are the same, it is not a choice at all.
>
> I cannot prove that two choices are of equal merit,> as I cannot choose both, in order to calculate the
> good that they bring about.
How could you even calculate the good that is done by the choice that you *do* make?

> That does not mean that> there is no such thing as free will. My problem with your ?tested scientific principles? is that, if they are believed, there is no such thing as making a decision on a conscious level, it is all down to chemicals. If we do not make decisions at a conscious level, what is the point of being conscious?

I believe we do make decisions at the conscious level, but consciousness is an illusion resulting from the behaviour of the chemicals. I believe that it seems likely that this feeling of consciousness has come about as a result of evolution - that it allows the brain to somehow work more coherently. Either that or it is coincidental. Besides, we have know way of knowing if, say, computers have some kind of limited form of this illusion.

> When you read this, you must decide what to say in response, if anything. Is this purely down to chemicals?

Yes.

> If so, why bother thinking about it?

The 'thinking about it' is the process of the chemicals/electrical signals making the decision.

> Should the words not just come?

Why do you think that? Computers often take time to work things out too, and we know that they obey the laws of physics.

> The fact that we are conscious is proof of free will.

Nope.

> Evolution shows that when something is not needed or used, it is lost.

Not always... we have an appendix don't we? And besides, I have explained that I think there is probably a good evolutionary reason for consciousness.

> Therefore, the fact that we use our minds (which, before you tell me there is no such thing, I will term that which is responsible for our conscious thoughts) to consider decisions before we choose is proof of free will.

No, it's just how the brain feels when it is working something out.

Oh, and you *still* haven't given me any sort of scientifically viable mechanism by which your free will works. Unless you can provide a scientific explanation, I don't personally see why I should change my mind.

(Mike, E&P forum)

Appendix T: Some examples of daily logging patterns for Mike and Elaine

MIKE

April 2005

Day	Date	Topics visited	Time spent (min)	r	p
Mon	11-Apr	3	45	4	1
Tues	12-Apr	1	33	2	1
Wed	13-Apr	3	29	4	1
Sun	17-Apr	1	1	1	0
Mon	18-Apr	1	1	1	0
Tues	19-Apr	1	1	1	0
Fri	22-Apr	1	1	1	0

May 2005

Day	Date	Topics visited	Time spent (min)	r	p
Sat	14-May	4	42	5	0
Sun	15-May	1	1	1	0
Wed	18-May	1	1	1	0
Thur	19-May	4	35	5	1
Fri	20-May	2	2	2	0
Wed	25-May	1	49	5	2
Thur	26-May	1	1	1	0
Fri	27-May	1	6	2	1
Sat	28-May	8	25	9	1
Sun	29-May	1	1	2	0
Tues	31-May	1	9	2	0

June 2005

Day	Date	Topics visited	Time spent (min)	r	p
Thur	02-Jun	1	20	2	1
Tues	07-Jun	2	61	6	2
Wed	08-Jun	1	1	1	0
Thur	09-Jun	1	1	1	0
Sat	11-Jun	2	12	4	1
Mon	13-Jun	2	3	2	0
Tues	14-Jun	1	1	1	0
Fri	17-Jun	2	47	6	2
Sat	18-Jun	1	1	1	0
Mon	20-Jun	1	29	3	1
Wed	22-Jun	1	1	1	0
Thur	23-Jun	1	63	2	1
Sat	25-Jun	1	1	1	0
Sun	26-Jun	4	71	6	2

ELAINE

May/June July 2005

Day	Date	Topics visited	Time spent (min)	r	Name of Threads
Sun	01-May	1	1	1	Ap
Fri	13-May	1	1	1	Ap
Tue	17-May	1	1	2	Ap/oe
Wed	18-May	2	1	2	Oe/gf
Mon	23-May	2	2	2	Ap/oe
Wed	25-May	1	1	1	Ap
Thur	26-May	1	1	1	Ap
Sun	29-May	1	1	1	Ap
Tue	31-May	1	1	1	Hr
Thur	02-Jun	1	1	1	Ap
Fri	03-Jun	1	1	1	Ap
Sun	05-Jun	1	1	1	Ap
Mon	06-Jun	2	2	2	Ap/Jn
Wed	08-Jun	2	1	2	Ap/Jn
Thur	09-Jun	3	2	2	Ap/Jn
Fri	10-Jun	1	1	1	Jn
Mon	13-Jun	2	2	5	Jn/Hr
Thur	16-Jun	2	1	2	Ap/Jn
Sat	18-Jun	3	3	3	Ap/Jn/Hr
Mon	20-Jun	2	1	2	Ap/Jn
Tue	21-Jun	1	1	1	Jn
Wed	22-Jun	1	1	1	Jn
Thur	23-Jun	1	1	1	Jn
Mon	04-Jul	2	2	2	Ap/Jn
Thur	07-Jul	1	1	1	Jn
Sat	09-Jul	1	1	1	Jn
Mon	11-Jul	1	1	1	JE
Tue	12-Jul	2	1	2	Jn/JE
Wed	13-Jul	1	1	1	Jy
Sun	17-Jul	1	1	1	Jy
Mon	18-Jul	3	2	3	Ap/Jn/Jy
Tue	19-Jul	1	1	1	Jn
Thur	21-Jul	3	3	3	Ap/Jn/Ju
Thur	21-Jul	2	2	2	Jn/Jl/hr
Fri	22-Jul	2	1	2	Jl/hr
Mon	25-Jul	4	2	4	Ap/Jn/Ju/hr
Wed	27-Jul	1	1	1	hr