Harkness and learning: In what ways does growth in student confidence manifest itself through Harkness lessons?

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A Research & Development Project Submitted for the MSc in Learning & Teaching 2019

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Abstract

This project set out to identify in what ways growth in student confidence manifests itself through Harkness lessons. Harkness lessons entail students and their teacher sitting around a single table, in conference with the teacher adjusting their role to be an observer or facilitator not an expert figure with the right answer.

Practitioner research was conducted in three phases that involved pre- and post-intervention questionnaires to measure students' assertiveness quantitatively and, to enrich the data with qualitative description, ongoing observations combined with terminal interviews and a Harkness-specific questionnaire. My own Year 13 class was the primary research focus, but colleagues' Key Stage 5 classes completed the questionnaires to provide cohort context.

The findings suggested students' confidence did increase and they self-report that Harkness lessons contributed to this growth. Such growth manifests itself in increased lesson participation, greater prior preparation (and consequent confidence to share ideas) and an increase in respect for their peers. The findings also highlighted the importance of a safe environment for ideas to be shared and indicated that dialogic skills need to be developed lower down the school and that regular use of Harkness lessons would benefit students in Key Stage 5 subjects.

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1 Introduction

1.1 Rationale

In an increasingly hard skills, technology-focused educational landscape (Christensen et al., 2010; Glaser, 2018; Horn, 2012) the need for developing dialogue and collaborative oral communication has perhaps never been greater with soft skills being increasingly in demand in the workplace (Brett, 2018; National Research Council, 2012). Problem solving, oral expression, negotiation and coordinating with others are included in the World Economic Forum's top 10 skills needed for 2020 (Gray, 2016; World Economic Forum, 2016) yet technology and digitalisation has focused classrooms towards the use of individual devices (Carter et al., 2017; Muir-Herzig, 2004; Yang, 2002) and the UK curriculum's terminal examinations, and the delivery of syllabus content with an eye on assessment, has led to some students adopting a more passive and dependent approach to learning (Kidd, 2015; Mansworth, 2016; Martin & Marsh, 2003; Owen-Yeates, 2005; Rogers & Hallam, 2010).

This project built upon my previous MSc empirical study of the passivity of Key Stage 4 students by adopting the pedagogy of Harkness (Cadwell & Quinn, 2015; Williams, 2014) which I implemented as part of that study having first encountered it in my Part 1 research into flipped learning (Flipped Learning Network (FLN), 2014; Tucker, 2012). My previous MSc assignments sought to increase student ownership of learning by looking at how to shift pedagogical approaches away from rote learning and the Gradgrindian dissemination of knowledge from teacher to students (Dickens, 1995; Lee, 2001; Thompson, 2009) – and the subsequent regurgitation of learnt content in examinations (Benton, 1999, 2000; Dymoke, 2002; Garner, 2013; Marsh, 2017; Stacey, 2015; Xerri, 2016) – towards more student-centred, active learning. My MSc has been an organic journey and this project explored the ways in which adopting the Harkness method develops the non-examined skills of students, in particular their confidence.

1.2 The Harkness Method

The Harkness method is a student-focused, dialogic pedagogy that originated at Phillips Exeter Academy (PEA) in 1931 as a result of a financial gift from Edward Harkness (Cadwell & Quinn, 2015; Phillips Exeter Academy, n.d.). Harkness' gift mandated PEA to change their classrooms from rows of desks with a teacher at the front to oval tables at which the teacher sat more democratically alongside their pupils in conference (Towler, 2015). By sitting around one table 'you explore ideas as a group, developing the courage to speak, the compassion to listen and the empathy to understand' (Phillips Exeter Academy, n.d.), it is an environment where everyone is encouraged to contribute.

1.3 School Context

At my school we are developing the use of Harkness lessons amongst other innovative pedagogies to prepare our students for their future lives. As an academically selective co-educational secondary British school overseas, we follow the UK curriculum with our students taking General Certificates in Secondary Education (GCSE) and Advanced Level (A Level) examinations. Our students are desirous of high attainment in these assessments and we are developing classroom practice to enhance their learning whilst maintaining our high academic outcomes. As a Specialist Leader of Education (SLE), my role has been to introduce and develop Harkness lessons and lead a Collaborative Learning Group (CLG). Initially one Mathematics colleague (Teacher A) adopted the Harkness method with me and we now have twenty-three teachers using Harkness lessons across twelve subjects, predominantly in Key Stage 5.

To preserve the anonymity of my school and the participants in this project, all references relating to local literature and policies are supressed. The educational context in which our school is located is one of high accountability with annual inspections and a national focus upon raising PISA and TIMMS scores to be among the highest performing countries. The national schools inspection board uses a framework to assess schools annually and its contents are influenced by the country's national agenda and future vision which include aspirations for 'a knowledge-based

economy driven by innovation, research, science and technology'. Our school's focus on innovative pedagogy chimes with this national focus. Within the inspection framework, innovation is expected to be seen in learning and teaching approaches, as well as classroom design, and Harkness lessons certainly fulfil these objectives, albeit the framework was not our reason for adopting them. Whilst the Harkness pedagogy is 88 years old it is new to our school and country, so in our context it is innovative.

1.4 Research Aim

To inform a potential roll-out of Harkness lessons lower down the school, I wanted to measure through practitioner research the effect Harkness lessons are having upon our older students. This research and development project therefore dovetailed my own pedagogical approach and philosophy with the school's objective to be research-led in its classroom practice and through collaboration with colleagues in the Harkness CLG it aimed to identify in what ways growth in student confidence manifests itself through Harkness lessons. Measuring the impact of Harkness lessons upon attainment was too difficult due to other influencing factors, but I hoped to establish whether Harkness lessons showed a growth in students' confidence given the passivity I witnessed in my previous empirical study.

Harkness lessons combine elements of different pedagogical areas so my literature review explored the following questions:

1. What are the key features and outcomes of Harkness lessons?
2. What effect does prior preparation have upon students' learning and confidence?
3. What effect does the learning environment have upon students' learning?

2 Literature Review

2.1 What are the key features and known outcomes of Harkness lessons?

2.1.1 What Harkness is

Harkness is an art, civil discourse and discord, a philosophy, an approach, a concept (Christoph, 2015; Hassan, 2015; Towler, 2015; Williams, 2014). The literature establishes that there is no one way to teach Harkness lessons (Hassan, 2015; Smith & Foley, 2009) and there are 'probably as many definitions of "Harkness Teaching" as there are practitioners of this elusive art' (Smith & Foley, 2009, p. 478). What the literature does agree on is that Harkness lessons are committed to getting students to take responsibility for their learning and to take ownership of what is said in their lessons (Orth et al., 2015). Acknowledging the contemporary technology debate, Hassan suggests that Harkness lessons equip students with 'the skills of dialogue, engagement and critical thinking', all of which are 'crucial' in the digital age to prepare students to be positive contributors to society (2015, p. 16). Such sentiments are echoed by Pérez-Andreu who believes that Harkness can help make the world a better place because only through the principles of dialogue will we 'create a society from which we can all benefit' (2015, p. 57).

The origins of Harkness lessons lie in the gift made to PEA by Edward Harkness in the 1930s. Harkness challenged the Principal, Lewis Perry, to think of a '"radical" new approach to secondary school education' (Towler, 2015, p. 33), an approach that would change the education system for the better, encouraging boys to 'learn to talk and think whilst [they are] talking' (Hassan, 2015, p. 14). Harkness wanted a method that made the classroom democratic, that enabled less advantaged students to speak up and admit their difficulties, a method that Perry noted was a 'conference or tutorial method of instruction' (Towler, 2015, p. 42) where students learn to communicate by doing rather than receiving (Christoph, 2015). Harkness' gift was not just financial, the radical shift from rows of desks to small groups of students seated around single tables, guided rather than taught by their teacher, was a 'powerful concept whose power has not waned' (Towler, 2015, p. 46) and to this day PEA and other US college prep schools use Harkness lessons as their pedagogical approach in lessons.

2.1.2 What Harkness is not

Despite only recently being adopted by a few UK schools (Abbott-Jones & Spencer, 2015; Paton, 2008) Harkness is not new. Aside from the longevity of the pedagogy at PEA, its roots lie in the collaborative teaching approaches of Socrates and Quintilian who both viewed the role of the teacher as an instructor to listen to and guide students in their acquisition of knowledge (Kennedy, 2017). Yet in trying to define what Harkness is, Smith and Foley (2009) suggest it is easier to define what it is not: Harkness is not a series of Socratic questions and Backer (2015) clarifies this further by suggesting that Harkness discussions differ from Socratic dialogue because the teacher's position has been moved from the centre. It is this shift in focus and power, from teacher to student, which distinguishes Harkness lessons from Socratic seminars (Williams, 2014). Williams also suggests that the Harkness pedagogy was deeply influenced by Emerson's thoughts on the concepts of self-realisation and self-reliance, reflecting the radical American pedagogical thinking of pragmatism and also Dewey's views on the social process of education (2014). Harkness lessons move away from the Socratic approach of the teacher directing the learning towards a pre-determined outcome (Foley, 2015; Geary & Atif, 2015), they are more open and 'less dogmatic' (Pérez-Andreu, 2015, p. 48) and the lack of a predictable outcome is viewed as one of the pedagogy's greatest assets (DiCarlo, 2015). Clarke (2015) goes so far as to view Socratic discussion as glorified call and response, echoing Mullgardt (2008) who views it as a version of traditional IRF instruction and suggests that Harkness requires the teacher to 'let go' (para. 6) rather than control interactions. In Harkness lessons the students are not there to answer the teacher's questions, rather they are expected to form their own and challenge each other's ideas and Huynh asserts that students forming questions is arguably more valuable than answering them (2016); Harkness lessons are student-centred with a focus on students teaching students (Wiggins, 2012). However, Wolfson disagrees, calling it 'another piece of Harkness mythology' (2015, p. 89). He argues that whilst students are at the centre of Harkness lesson, it is the curriculum, the subject, which is at the centre of the table; Harkness lessons are really subject-focused (Hicks, 2017; Wolfson, 2015).

2.1.3 The Harkness table

The Harkness table has come to be the focal point of this pedagogy with some educators going so far as to suggest that it is in fact more symbolic than practical. Williams (2014) asserts that the table represents the philosophy of a school, citing Heskel and Dyer's view that Harkness is a 'central metaphor' for PEA's learning culture (2008, p. vii). The table is inextricably linked to the philosophy of Harkness lessons: its shape is democratic, teachers sit alongside students as equals rather than raised above or in front of them (Sneedon, 2015). At an oval table everyone is seen and heard, there is nowhere to hide (Huynh, 2016; Kennedy, 2018), 'the communal nature of the process cannot help but point out who is thriving and who is not' (Hiza, 2015, p. 148); sitting in direct eye contact with others generates participation and facilitates discussion-based learning (Stannard, 2016). Harkness tables are usually oval because an oval table permits universal eye contact (Kennedy, 2017). Pettigrew says that the importance of the table to the conduct and tone of a lesson cannot be overstated:

> [It] reminds us that this is collegial work, and its great smooth plane physically connects us; we look directly into each other's faces, engaged in mutual investigation. The physical fact of the table seems to encourage and facilitate collaboration. (2015, pp. 156-157)

Whilst the table can foster collaboration and generate participation if a lesson is conducted effectively (Paton, 2008), Williams points out that purchasing oval tables would have no impact if the learning culture of the school was misaligned because 'isolated from an appropriate context, a method of Harkness lessons would be ineffective' (2014, p. 65). Furthermore, an oval table is not essential for collaborative discussions (Kennedy, 2017), tables can be arranged in a circle or one big rectangle (Orth et al., 2015) although like Pettigrew, Wolfson (2015) is convinced of the virtue of sitting equally around one table due to the physical connection it creates. There is also a financial implication to purchasing bespoke oval tables that only enable a small group of students to use a room when schools need rooms to be used with maximum efficiency, Williams points out that this often limits Harkness tables to private schools that can not only afford oval tables, but enough teachers for such small class sizes (2014). A substantial proportion of Edward Harkness' gift to PEA was spent employing more instructors to enable class size reductions and the construction of buildings so

that each teacher had their own room (Towler, 2015); PEA currently has a teacher to student ratio of 1:5 (Boarding School Review, n.d.).

Despite the tables' democratic and equitable intentions the criticism of elitism is levelled at the pedagogy (Clarke, 2015) and the selectivity of PEA is one reason detractors provide for why Harkness lessons would not work elsewhere. Stannard suggests that the tables reveal 'the fundamental importance of cultural capital' (2016, para. 8) with children who grow up talking to adults around a dining table having an advantage, 'the Harkness table simply translates this advantage to the school setting' (ibid.). Orth et al. acknowledge that the method does require 'high standards of behaviour and pupil engagement' but that using this as a reason why it cannot work at non-selective schools is 'a falsehood and is a self-fulfilling prophecy' (2015, para. 53). Clarke also argues that the concerns raised against Harkness are 'overblown and the benefits for the students not fully appreciated' (2015, p. 207), such benefits have been discovered in non-selective state schools like Isaac Newton Academy in Ilford, East London, whose adoption of Harkness lessons has had a positive impact not only for academically strong students, but as an inclusive lesson format for students with Special Educational Needs (Abbott-Jones, 2018; Abbott-Jones & Spencer, 2015).

2.1.4 The teacher's role

The adjustment to the teacher's role in the classroom is a key feature of Harkness lessons, alongside that of their students. The teachers' experiences of Harkness lessons and personal explanations of the roles they have adopted in the PEA book (Cadwell & Quinn, 2015) are multifarious. Thoughtful metaphors are employed with the teacher being presented alternately as a coach watching athletes perform and suggesting improvements (Bergofsky, 2015; Hassan, 2015) or as an editor who has a stake in the narrative but no ownership of it (Sneedon, 2015). What is clear from the literature is that the teacher's role in a Harkness lesson is to guide, to facilitate, to lead from behind and to subdue their own ego and voice (Boadi, 2015; Donarski, 2016a; Kurtz, 2015; Sevigny, 2012), a suggestion also made in the wider dialogic literature by Alexander (2017) and Mercer (2000). Backer (2015) presents Harkness as a listening pedagogy,

the teacher needs to not only model good listening but have the humility to surrender control and modulate their behaviour in such a way that the students learn to assume authority. Donarski (2016b) sees this handing over of authority as adopting the role of a referee, making sure that discussion etiquette is followed but otherwise witnessing the students' learning with the sensitivity of a bird watcher. Observing and listening are skills that need to be learnt by all participants at the table, Donarski argues that students need to be taught *how* to have effective discussions and ask good academic questions (2016a); teaching students how to learn is a view shared by other Harkness practitioners too (Backer, 2016; Bergofsky, 2015; Foley, 2015; Orth et al., 2015). Students also have to be taught to embrace a new pedagogical approach, Waterman (2015) suggests that students need to be trained not to expect monologic lectures, with teachers indicating the shift from 'sage on the stage' (King, 1993) to a guide at the table who is not the font of all knowledge (Smith & Foley, 2009).

Teacher intervention is of fundamental importance, knowing when to chip into a discussion is always difficult to gauge and tension exists between liberating students to explore ideas freely and facilitating their exploration or delivering instructional content (Foley, 2015; Hiza, 2015) because an ill-timed question or comment can stun a conversation (Golay, 2015). Trafford (2015), however, found that adopting this more passive role was unsettling for students used to teacher-led learning and initially students get frustrated with awkward silences that arise (Bergofsky, 2015; Orth et al., 2015; Smith & Foley, 2009); silences also need to be taught, students (and teachers) need to be comfortable with them and embrace them as thinking time (Donarski, 2016a; Moore, 2015; Mullgardt, 2008; Perdomo, 2015; Pettigrew, 2015). Cadwell (2015) does point out though that silences can have a negative impact if the lesson is teacher-led, it can isolate students, similarly, forcing students who do not subscribe to dialogue, are shy or who are silent learners, can negatively affect engagement and lead to less effective learning (Gong, 2015; Sevigny, 2012; Townsend, 1998). Moore suggests that to combat this 'everyone needs to know the value – rather than the embarrassment – of our shared silence' (2015, p.71), teaching students how to use silence empowers them and makes it beneficial to learning and Potash (2016) suggests

that a lack of pauses and silence may in fact indicate an absence of listening and thinking. Another perspective is offered by Matlack (2015) who criticises teachers who clam up all together, he asserts that a teacher sitting at the table should contribute to the discussion as an equal participant, thus maintaining equity of dialogue.

It is a misconception that teachers are superfluous or silent in Harkness lessons (Bergofsky, 2015; Foley, 2015), the teacher is responsible for pushing students towards their own 'horizons of understanding' (Pettigrew, 2015, p. 157) through establishing the collaboration and responsibility of students (Geary & Atif, 2015) and the structure of the discussion (Williams, 2014), but also by choosing preparatory materials that facilitate learning and enable students to lead their lesson discussions (Boadi, 2015; Christoph, 2015; Foley, 2015; MacKean, 2015); selecting the right material is no easy task because it needs to be challenging enough to generate questions whilst being accessible for a range of abilities (Orth et al., 2015; Smith & Foley, 2009). McDonald (2016) and Williams (2014) also caution that it is essential that teachers are fully prepared for Harkness lessons, planning for a range of outcomes and knowing subject content thoroughly and whilst the teacher is no longer posing as the expert at the front of the classroom, Foley (2015) argues that you actually have to be better prepared for Harkness lessons than teacher-led lessons because you cannot control the direction of discussion and need to be able to adapt to wherever the students range. Christoph (2015) suggests that this expected mastery of knowledge is challenging for teachers, but that the intellectual independence demanded of both teacher and student can foster lifelong learning and is as beneficial for the teacher as it is for their students.

Another active role that a teacher can adopt in Harkness lessons is mapping the discussion to provide live or summative feedback (Sayles, 2018). Tracking discussions and noting the type of utterances made enables the teacher and students to reflect upon their contributions and seeing the map evolve can prompt students to participate more, emphasising the co-operative nature of Harkness lessons (Hicks, 2017; Mullgardt, 2008; Smith & Foley, 2009). However, Golay (2015) is deeply critical of mapping and views it not only as a distraction for the students, but also for the teacher who should be listening and participating rather than drawing lines. A solution to this

criticism is suggested by Huynh (2016) who proposes that students can be used to observe and map the discussion, by doing so they also metacognitively engage with what makes for an effective discussion, but Gong (2015) challenges such an approach, suggesting that the subjectivity of a student's interpretation of a discussion, particularly when it is flowing at speed, can lead to incorrect mapping and unfair judgement of students' participation. Providing feedback and assessing learning and progress is, however, necessary and whether it is through mapping the discussion or asking questions that prompt student discovery (Christoph, 2015; Wiggins, 2012), the teacher needs to play an active role alongside their students in dialogic crafting of knowledge (Moore, 2015).

2.1.5 The student's role

Harkness lessons demand that students take responsibility for their own learning, shouldering the expectations of preparation for, and participation in, discussions (Hassan, 2015; Moore, 2015; Orth et al., 2015). Preparation is essential for Harkness lessons, it is the groundwork for discussions and the success of a lesson depends upon the preparatory work (Donarski, 2016a; Smith & Foley, 2009) because 'it is impossible to create or learn something out of nothing' (Pérez-Andreu, 2015, p. 51); students cannot contribute to the discussion if they are unprepared (Fradale, 2018), prior knowledge is vital (Hicks, 2017). Well-set preparatory work that provides students with the raw materials fosters greater independence with students reading more widely and at a higher level (Orth et al., 2015; Waterman, 2015). Bergofsky (2015) suggests that students quickly become honest regarding their preparation for lessons because the responsibility for the success of the lesson lies with the students, and this, according to Sevigny (2012), is the real genius of Harkness lessons because no-one can escape: a lack of preparation is quickly evident at the table and students consequently learn to take responsibility for not only their own learning, but that of others because whilst they might prepare independently, they learn collectively (Pettigrew, 2015), a responsibility that begins with homework but underpins the culture of PEA (Geary & Atif, 2015). Preparation leads to confidence according to Christoph (2015) who believes that 'the prepared student is an eager student' (p. 75) and that participation

and engagement increase the more prepared a student is for a lesson. However, time for preparation can be difficult in schools without the dedicated evening prep slots of boarding school. Carving out time for preparation in a school's curriculum time is perhaps necessary for the regular adoption of Harkness lessons because time is needed not only to read preparatory material or to research topics further (Moore, 2015), but students also need time to think and develop questions in response to what they have read argue Orth et al. (2015), whose solution at Manchester Grammar School was to issue material days in advance, a solution that works if Harkness lessons occur intermittently but not if Harkness is adopted as a main approach with students regularly needing to prepare overnight.

Participation in Harkness lessons is an expectation that works in conjunction with preparation: they each motivate students to do the other (Orth et al., 2015). Whilst Sneedon identifies a 'subtle pressure' (2015, p. 99) on students to participate, enabling them to gently overcome their fears and anxieties about contributing ideas, others perceive students being compelled to talk because no-one can hide so active participation is necessary (Kennedy, 2017, 2018). What is apparent from the literature is that in many US schools participation in class is graded, both individually and/or collectively, which shifts the focus of responsibility to being consequential in outcome (Mullgardt, 2008; Sayles, 2018). Gong (2015) criticises such a practice based on her own experience as a Harkness student, suggesting that grading courses based on cumulative participation leads students to adapt their contributions to simply be heard. Teaching students *how* to contribute is therefore necessary and for Cadwell (2015) this often requires a distinction to be made between the competitive approach of debate and the collaborative quality of discussion. If students are prepared and thus able to contribute, another aspect to be learnt is how to make eye contact with peers rather than just the teacher; the table enables participants to look directly at one another, but learning to seek affirmation from a source other than the teacher is an essential skill to learn, as is learning how to disagree in a collegial way (Moore, 2015).

Establishing connections between participants around the table builds a collaborative environment in which students work together to build knowledge, solve

problems, critique and modify each other's ideas and learn from one another (Abbott-Jones & Spencer, 2015; Geary & Atif, 2015; Potash, 2016; Smith & Foley, 2009). Huynh (2016) suggests that Harkness mirrors the adult world of collaboration, indeed Harkness' original ideas were borne from his experience in corporate boardrooms and the student-focused dialogic engagement of Oxford tutorials (Williams, 2014), with all such environments requiring participants to 'subsume themselves within a group' (Moore, 2015, p. 71), reducing their egos and valuing the intelligence of collaborative enterprise (Brownback, 2015).

2.1.6 Other outcomes

Edward Harkness intended the new pedagogy to benefit students who lacked the confidence to participate in a traditional linear classroom (Towler, 2015) and the PEA book (Cadwell & Quinn, 2015) certainly implies an increase in individual confidence through its examples of increased participation, eager engagement and co-operative learning. Other practitioners also identify a change in confidence within their own classrooms. In a small-scale study of her own class Trafford (2015) reports that her students commented on a growth in confidence that led to increased participation and greater enjoyment from Harkness lessons, a finding that echoes Mullgardt's sentiments that shy students find the intimate environment of a Harkness table a space in which they can grow in confidence (2008). In a SecEd SEN Supplement (2018) Abbott-Jones extols the inclusive nature of Harkness lessons in giving students the confidence to communicate their ideas, address their peers and become more independent in their learning, an outcome they have witnessed across Key Stage 3 as a result of their Harkness programme (Abbott-Jones & Spencer, 2015). Using Harkness as a tool to instil confidence is an idea that Donarski (2016a) raises, suggesting that Harkness lessons can be used to build confidence prior to examinations by enabling students to explore their knowledge orally to identify whether they need to develop examination skills or subject knowledge.

Deepening and widening knowledge is another outcome of Harkness lessons, the independent enquiry and preparation and subsequent collaborative explanation of

ideas helps students to explore material in unplanned directions, from new angles often beyond the specified topics of the curriculum (Brownback, 2015; Huynh, 2016; Reuter, 2015). Cadwell (2015) comments that knowledge grows at the table and leaves larger than it began; the active nature of the acquisition and development of the knowledge distances it from what Anthony Seldon has referred to as 'passive, exam-based rote learning' (Paton, 2008, para. 6). Mullgardt (2008) echoes this view: Harkness lessons make students '*think* rather than just memorize and regurgitate' (2008, para. 1, original emphasis and spelling), they have to engage with the material by discussing it (Sevigny, 2012) because lessons are learning-focused rather than information-giving (Pérez-Andreu, 2015). Harkness lessons not only enable students to become independent learners, but they become independent thinkers (Perdomo, 2015), using their peers as much as textbooks and teachers as sources of knowledge (Geary & Atif, 2015).

2.2 What effect does prior preparation have upon students' learning and confidence?

2.2.1 What is flipped learning?

The impact of prior preparation upon students' learning is discussed in the literature about flipped learning, a pedagogical approach that has become more popular in the last decade (Sohrabi & Iraj, 2016). Many educationalists regard Bergmann and Sams (2012a, 2012b) to be the most recent pioneers of flipped learning, yet this is an accolade that Baggaley (2015) refutes and an approach that Sohrabi and Iraj (2016) trace back to 1982. Hassan points out that whilst there is a contemporary interest in 'the "flipped classroom" or student-centred learning', it is rooted in the Harkness philosophy 'of prior preparation followed by active participation' and that 'this "new concept" has guided learning at PEA for more than 85 years' (2015, p. 15). Bergmann and Sams may not have been the first teachers to change the way they approached instruction and subsequent application, but they were arguably the first to publicise it. In 2012 they established the Flipped Learning Network™ as a not-for-profit organisation to assist educators who wished to flip their classrooms (Flipped Learning Network (FLN), 2014; Hamdan et al., 2013b). The term 'flipped learning' is

consequently applied to a variety of practices that are primarily focused upon switching instructional learning out of the classroom and consolidation and collaborative application in (Straw et al., 2015) and the terms 'inverted classroom', 'reversed instruction' or 'blended learning' are also used in reference to this switch (Bergmann & Sams, 2012a; Hamdan et al., 2013; Hao, 2016; Hao & Lee, 2016). Often the use of the term focuses upon video lectures that students view for homework with platforms such as Khan Academy and TED-Ed providing a ready-made bank of videos for teachers to set as instructional homework (Sohrabi & Iraj, 2016; Tucker, 2012). The use of pre-prepared lectures has led Geary and Atif to explicitly distance Harkness learning from flipped learning (2015). They argue that flipped learning's reliance on monologic lectures does not align it to the dialogic nature Harkness: a lecture is still a lecture whether it is delivered in person or via an online video. For Geary and Atif, Harkness requires pre-preparation but not of a delivered nature, they suggest that 'teaching can be more about creating an environment that fosters the *discovery* of content' (2015, p. 168, original emphasis), that Harkness requires independent research and study with personal engagement in the material rather than the delivery of another person's ideas through a video. This echoes Bruner's assertion (1960) that in order to grasp fundamental ideas, an attitude toward learning, enquiry and independently solving problems needs to be developed; discovery needs to be cultivated in the classroom rather than teachers imparting the answers. Another criticism of online lesson videos and digitised learning is that the expert teacher is being replaced altogether (Hao & Lee, 2016) and that schools might employ less-qualified staff (de Araujo et al., 2017), criticism dismissed in an article that suggests that platforms like Khan Academy can 'liberate a good teacher to become even better' (The Economist, 2011). Despite these concerns, the varied approaches to flipped learning mean that the content-focused homework can utilise texts, articles and internet research too (Straw et al., 2015) and whilst video lectures were the initial focus of Bergmann & Sams' approach (2012b), the individual nature of pedagogical adoption by teachers means that the term has become a broad umbrella for prior learning and preparation, regardless of mode.

2.2.2 The effect of prior preparation upon learning

The rationale behind flipped learning is that content can be learnt independently and class time can be used by teachers to facilitate and coach students in applying the knowledge they have learnt at home, assisting them directly with problems rather than only diagnosing gaps in knowledge when marking homework (Muir & Geiger, 2016). It is a student-focused approach to learning that fosters greater independence in learners whilst also enabling students to self-regulate their learning at home at a pace that is individual and in their control (Fulton, 2012). The ability to dictate the pace at which they acquire and learn knowledge is one of the key benefits of a prior-preparation approach to learning as it increases responsibility for learning, a more active engagement in the acquisition process and the freedom to study at a pace that can be tailored to their individual learning style (de Araujo et al., 2017; Gough, Dejong, Grundmeyer, & Baron, 2017; Moffett, 2015; Roach, 2014). Fulton (2012) focuses upon a case study of a US high school Mathematics department who shared their top ten reasons for adopting a flipped lesson approach; their number one reason to flip their lessons was pace. The teachers at Byron High School felt that traditional teacher-centred classrooms benefited stronger students who could learn at the pace dictated by the teacher, rapidly jotting down notes and learning material quickly, but bright students could also get bored just as much as less confident students struggled (Fulton, 2012). By adopting a flipped approach the Byron High School staff reported an increase in confidence in students' knowledge because they could view and review material at their own pace prior to lessons (Fulton, 2012, p.21). Whilst it is perhaps easier to compartmentalise and flip the Science classrooms of Bergmann and Sams and the Mathematics classrooms observed and reported on by Fulton and Araujo et al. (2017), Gough et al. (2017) suggest that humanities courses that require discursive exploration of concepts are less easily flipped. Yet the prior-preparation and subsequent dialogue of a Harkness lesson challenges and perhaps addresses this assumption with the independent time outside of the classroom to explore material at one's own pace and depth facilitating the subsequent discussion that occurs around the table.

2.2.3 Classroom roles

In a flipped lesson students often work in small groups or pairs, collaborating on tasks that require them to apply the knowledge they acquired outside of the classroom (Fulton, 2012). Creating their own curriculum that focused on external content learning 'free[d] up class time for discussion and practice' (Fulton, 2012, p.21), providing students with support from not only the teacher, but also their peers. Students consolidate their knowledge through practical application (Bergmann et al., 2011) and Fulton's study preceded Roach's similar findings that 'previous exposure to the material' (2014, p. 80) was beneficial for both the students' learning and the instructor's lesson. Roach's study of a partially flipped college-level Economics course also highlighted the benefits of class time being freed up to explore ideas and knowledge in greater depth collaboratively because the content has already been learnt, a finding that echoes the views of Carpenter and Pease (2012) who suggest that through flipping the learning the classroom 'potentially becomes a place where students spend less time passively receiving information and more time interacting with peers, teachers and challenging content' (p. 38). This description of active learning and the collaborative application of pre-prepared knowledge of flipped learning is similar to that of Harkness lessons: by acquiring knowledge independently in advance of lessons students are able to collaboratively explore problems and create solutions that combine their individual ideas, actively learning and thinking critically.

The teacher's role is also adjusted by a flipped learning approach, rather than delivering instructional content they become King's 'guide on the side' (1993), a facilitator in the classroom (and in a Harkness lesson), there to help only when needed and to address the students' needs in response to their prior learning, teasing out understanding, questioning perceptions and clarifying misunderstandings (Carpenter & Pease, 2012; de Araujo et al., 2017; Hamdan et al., 2013a; King, 1993; Roach, 2014; Straw et al., 2015). Flipping lessons and requiring students to prepare material in advance frees up classroom time for teachers to address students' individual needs, helping them directly rather than correcting homework after the moment of misunderstanding or error has occurred (Straw et al., 2015), it facilitates a more direct

relationship between the student and the teacher who can more readily and personally address students' needs (de Araujo et al., 2017).

2.2.4 Confidence

A small-scale qualitative study by NFER and Nesta into the impact of adopting a flipped learning approach in Key Stage 3 Mathematics on learning and teaching identified an increase in confidence, as well as the skills and practice identified already in the wider flipped learning literature. In their research, Straw et al. (2015) studied nine schools and teachers reported that students' confidence (in Mathematics) had increased in the classes that used flipped learning and that this related to 'their increased knowledge and understanding gained through regular homework and independent learning' (Straw et al., 2015, p. 24); by looking at material in advance students came to lessons confident that they would be able to engage in lessons. The use of flipped learning also made students more aware of their individual strengths and weaknesses: as they became more independent in their learning their self-evaluation and metacognitive reflection increased too (Straw et al., 2015).

2.2.5 Limitations

Given flipped learning relies upon the completion of homework and prior-preparation, one of the challenges cited most in the literature (others include time for staff to prepare material (Wang, 2017), students' access to technology outside of school (Fulton, 2012) and resistance to change (Carpenter & Pease, 2012)) is the lack of preparation. The adoption of an active, student-centred pedagogy after years of passive reception of teacher transmission is hard for students to adopt (Chen et al., 2014; Petersen & Gorman, 2014) with Stoten's (2014) study of students at a sixth form college finding that years of conditioning and learning habits would still persist. Not watching videos in advance, or failing to read material issued is a common challenge across the studies cited, a teacher in de Araujo et al.'s research (2017) found that the starts of her lessons were often wasted because students had not prepared, an issue combatted in Shaffer's (2016) study by an English teacher setting quizzes to test preparation. The need for buy-in is critical for a prior-preparation approach to be

successful, Straw et al. (2015) suggest in their report that the homework culture of the school and the students needs to be in place before a flipped learning approach can be adopted and that offering dedicated preparation time in IT suites was one solution alongside setting high expectations of completion. Encouragingly though, their report corroborated the wider literature's findings that, where flipped learning was implemented successfully, it had benefitted students' learning and their acquisition of skills.

2.3 What effect does the learning environment have upon students' learning?

2.3.1 Classroom layout

The academic literature regarding classroom environments suggests that the layout reflects the educational philosophy or pedagogical style of the teacher (Arnold et al., 1993; Careena Fernandes et al., 2011; Earp, 2017). This chimes with the Harkness philosophy where the layout of the room is dictated by the pedagogy being practised. Just as the Harkness table is deemed to be symbolic of the lessons taught and the school's approach to learning (Williams, 2014), Harvey and Kenyon (2013) state that learning environments 'symbolize an institution's vision of educational philosophy' (p. 1, original spelling), a sentiment that echoes Sommer's (1977) earlier views that teachers should be able to justify the layout of the classroom 'on the basis of certain educational goals' (p. 174), and Jones's even earlier assertion (1955) that the environment reflects a teacher's educational philosophy. Gremmen et al. (2016) attempt to clarify this idea by suggesting that a room's layout depends upon whether a teacher is subject-orientated (transmission-focused) or student-orientated (constructivist) in their pedagogical approach, a distinction also made by Wolfson (2015) regarding Harkness lessons.

This physical manifestation of a teacher's outlook, a 'built pedagogy' according to Monahan (2002, p. 1), is not, however, fixed according to Fernandes et al. (2011) who suggest that the nature of a task or the desired behaviour of students can necessitate a change in layout, as can the size of the room (and class); the physical space can dictate the layout (Denton, 1992). Yet given the recognised importance of the layout in relation to educational philosophy, Gremmen et al. (2016) suggest that

seating is not focused upon enough in teacher training despite its importance for 'both the academic and social development of students' (p. 751) and Weinstein (1981) preceded this by noting that curriculum and instruction are prioritised over classroom space considerations despite the acknowledgement that the space affects students' attitudes and behaviour. O'Hare (1998) states that 'architecture matters' (p. 706) and he is not referring simply to the walls, he believes that properly designed classrooms 'not only accommodate active learning, but encourage it' (p. 719) and Sommer (1977) suggests that the arrangement is part of 'a non-verbal communications system' (p. 174); the design created by the teacher communicates and fosters the type of learning that occurs.

In considering traditional, linear, row and column layouts and more student-focused horseshoe, semi-circular or circular designs, the literature identifies significant effects upon students' learning (Arnold et al., 1993; Careena Fernandes et al., 2011; Earp, 2017; Gremmen et al., 2016; McCorskey & McVetta, 1978; O'Hare, 1998; Woolner et al., 2007). Rows and columns emphasise the role of the individual and enable passive or disengaged students to hide outside of what Marx et al. (2000) term the 'action-zone' (p. 251), a T or triangle shaped area that marks out where participation dominates, identified through their research into the relationship between seat location and student-teacher interaction. Marx et al.'s findings suggested that along with a decrease in participation moving away from the teacher's position at the front, attainment decreased from front to back too. Within rows and columns the seating arrangement has a significant impact in terms of participation and attainment (Benedict & Hoag, 2004; McCorskey & McVetta, 1978); if students select their own seats then those who are more driven occupy the front and centre, with the less motivated (or late) students being marginalised at the sides and back in lessons (Careena Fernandes et al., 2011). Even when seating was assigned, the impact of location on attainment and participation remained (Benedict & Hoag, 2004) with a correlation between higher participation and higher achievement (Careena Fernandes et al., 2011). Seating therefore influences students' attitudes to, and the development of, their learning (Gremmen et al., 2016).

Weinstein (1981) argues that row arrangements are teacher-focused, akin to the monologic approach discussed earlier, with Earp viewing them as encouraging 'sit and learn teaching' (2017, para. 5) which McCorskey and McVetta (1978) had previously identified as a less desirable layout for learning and teaching. However, with larger classes it is acknowledged that the use of rows and columns facilitates control for a teacher (Holley & Steiner, 2005): assigning seats, being able to restrict eye contact to the front and limiting student interaction enables the teacher to direct the learning (Careena Fernandes et al., 2011), which in some cases may be desired if students need to work independently.

Gremmen et al. (2016) refer to the teacher's 'invisible hand' affecting social processes within their classroom through its physical order. If linear layouts are an obstacle to discussion and student interaction (O'Hare, 1998) then horseshoes, small group layouts or circles enable students to engage in a more socialised approached to learning with greater interaction (McCorskey & McVetta, 1978; Woolner et al., 2007); Gremmen et al. argue that such socialisation can enhance achievement (2016). Facing peers facilitates communication, eye-contact and promotes positive interactions between students, and between students and the teacher (Careena Fernandes et al., 2011). Classrooms designed with discussion in mind utilise layouts that promote and enhance communication with circles being seen as conducive to dialogue (Gremmen et al., 2016) and tables as affordances to students' learning (Rands & Gansemer-Topf, 2017). Such classroom designs demand greater accountability, increased participation and active listening (Parsons, 2016); similar expectations to Harkness lessons. By changing a space to a non-linear layout, the barriers between students and the teacher, both physical and psychological, are erased or at least blurred (Rands & Gansemer-Topf, 2017), leading to increased participation and a more egalitarian environment with the students having easier access to their teacher (Careena Fernandes et al., 2011; Parsons, 2016) and the teacher taking on the role of a facilitator with a less direct role in the students' learning (Gremmen et al., 2016). These views echo those expressed in the Harkness literature: circular seating and shared surfaces promote student-centred, collaborative learning where eye-contact is enabled, no-one can hide and the role of

the teacher is changed (Arnold et al., 1993; Harvey & Kenyon, 2013; Parsons, 2016). However, Parsons (2016) highlights that some students are uncomfortable facing their peers and having nowhere to hide.

It should be noted though that layout is but one factor in creating a physical space for learning because classrooms can be seen as a collection of micro-environments (Earp, 2017) and that they are 'physical entities as well as organisational units' (Marx et al., 2000, p. 249) where the climate (heating and lighting) play an important part too in fostering effective learning (Jones, 1955; Woolner et al., 2007).

2.3.2 Classroom atmosphere

Alongside the physical environment of the classroom, the atmosphere within it also has an effect on students' learning. Holley and Steiner's study (2005), albeit of university students, reports that safe classroom environments affected how much and what students learnt during their course. Of the 121 students surveyed, '97% indicated that it was very important' to create a safe space in the classroom and that it 'changed what they learned' (p. 55). When asked to elaborate on this they indicated learning others' ideas, being challenged to expand their views and experiential content as being some of the distinguishing features of safe spaces. Parsons' findings (2016) echo this: the students she interviewed reported that hearing their peers' ideas and listening to others was beneficial to their learning and they reported that roundtable classrooms were more relaxing, open and comfortable – a view that matched Holley and Steiner's (2005) study where students indicated that rooms where they could see everyone contributed to creating safe learning spaces; linear classrooms were perceived as less safe.

Students' perceived level of comfort and its impact on learning appears in a number of articles (Arnold et al., 1993; Jones, 1955) with Careena Fernandes et al. (2011) suggesting that it affects achievement and success; their research links seating with comfort, that when self-selected it can indicate social pressures as well as personal comfort and engagement. The emotional climate of a room was considered by Jones (1955) to be not only vital to learning but the teacher's responsibility, an idea that underpinned Holley and Steiner's (2005) study fifty years later. This echoes the

Harkness literature that suggests teachers can create comfortable learning environments through teaching students how to listen to and discuss ideas respectfully (Smith & Foley, 2009), establishing guidelines for lessons (Holley & Steiner, 2005; Mullgardt, 2008) and fostering a safer atmosphere of collaboration rather than competition (Tingley, 2009). Yet Boostrom (1998) argues that being comfortable and being safe are different things and that safe spaces should not be without challenge and struggle nor stress-free: in order to learn, and for students to think critically, there needs to be managed conflict (Holley & Steiner, 2005), students need to learn to respect ideas that challenge their own. Respect is a key part of the Harkness philosophy: for other participants, for different views and for learning (Boadi, 2015; Hassan, 2015; Wolfson, 2015).

Whilst none of the wider environment literature reviewed explicitly referred to student confidence, it does establish that atmosphere and design affect engagement and participation which in turn affect attainment. In setting the right environment for learning, students will be engaged and engagement in the earlier discussion of Harkness and Flipped Learning has been linked to confidence.

2.4 Research Questions

The literature shaped the following research questions for my project:

1. Does student confidence increase?
2. How does student participation change?
3. Does prior preparation contribute to a growth in confidence?
4. Does the environment contribute to students' growth in confidence?

3 Methodology

3.1 Design

I approached this research project from a reflective rather than critical theorist angle (Cohen et al., 2011) because I wanted to explore the effects of my own pedagogical approach upon my students' learning. It is ethnographic and idiographic (Cohen et al. 2011), focusing primarily upon one class and the research's concern for individual students' experiences and views makes it pragmatic, 'practice-driven' (Denscombe, 2008, p. 280), fulfilling the reflective nature of practitioner research.

Because I wanted to capture a snapshot of views across time to establish how growth in confidence is manifested I used a survey approach to capture a large amount of data as easily as possible (Edwards & Talbot, 1997). Given the part-time nature of this MSc and the short timescale (9 months) afforded to this research project, it was a short-term longitudinal study and as 'the most obvious use of longitudinal survey design is in the before and after measures relating to a specific intervention' (Edwards & Talbot, 1997), the research design had three distinct phases (Figure 1) with pre-/post-enquiries framing ongoing observations (Menter et al., 2011) of one class, making it only quasi-experimental because there was no control group to compare the change with. Whilst the project focuses primarily upon my own Year 13 English class, through collaboration other colleagues' classes in Key Stage 5 also completed questionnaires which brought in elements of cross-sectional study to compare cohorts (Edwards & Talbot, 1997).

Phase	**Time**	**Instrument**	**Participants (*n*)**
1 Initial	September	Pre-intervention Assertiveness Formative Questionnaire (AFQ) (Gaumer Erickson & Noonan, 2018) *Appendix A*	Year 13 English (*11*) Year 12 (*34*)
2 Ongoing	September-April	Observational mapping and coding during intervention	Year 13 English (*11*)
3 Terminal	May	Post-intervention AFQ	Year 13 English (*11*) Year 12 (*34*)
		Harkness Questionnaire (HQ) *Appendix C*	Year 13 *(33)* Year 12 (*44*)
		1:1 Interviews *Appendix D*	Year 13 English (*5*)

Figure 1: Research Phases

3.2 Intervention

To ascertain how growth in student confidence manifests itself in Harkness lessons, the research required Harkness lessons to be adopted with classes who had never experienced them previously. I adopted the use of regular Harkness lessons over the course of two and a half terms with my Year 13 class who had not previously experienced this pedagogy, but this approach was at times paused due to internal mock examinations and the completion of coursework. The colleagues who collaborated in Phase 1 and Phase 3 of the research were also adopting Harkness for the first time with their classes.

3.3 Participants

The participants in the research were determined both by context and the research question; sampling was not random or even systematic, participation was determined by whether the students were taught Harkness lessons and by whether their teacher wanted to collaborate in the research. Given the nature of practitioner research and the idiographic strand of this research, my own Year 13 English class were the primary focus because 'first-hand enquiry produces not just knowledge but a genuine appreciation of the matter' (Menter et al., 2011, p. 30). The class comprised four male students and seven females aged 17-18; nine of the class had been taught together in Year 12, with two students joining the class in September so the class was already comfortable with one another. The arrival of a new teacher and a new pedagogy meant that in some ways it was easier to implement the intervention given they were not used to my pedagogical approach already. The sampling was also sequential, with the initial sample for Phases 1 and 2 preceding that of the students interviewed in Phase 3, who were selected based upon the observational data I had gathered during Phase 2 of the research. In Phase 3 I invited five students based upon their lesson participation with two students being regular participants in discussions, one student who had increased over the course of the year and two who had shown inconsistency in their level of participation as negative case samples (Cohen et al., 2011).

The sample size of my own class was small ($n=11$), so widening the Phases 1 and Phase 3 research questionnaires to other students experiencing Harkness in Years

12 and 13 increased the sample size (*n=77*). These students were taught by colleagues who joined the Harkness CLG and who were willing to help gather data to see what effect Harkness lessons were having upon our students' confidence. Whilst Harkness lessons were occasionally being taught by some of these colleagues to Key Stage 4 and Key Stage 3 classes too, I decided to limit the scope of the research to Key Stage 5 because class sizes, and therefore the environment for the Harkness lessons, would be similar. The purposive sampling would 'enable comparisons to be made [and] to focus on specific, unique issues or cases' (Cohen et al., 2011, p. 156; Teddlie & Yu, 2007).

The sample was valid in terms of being representative of the students receiving regular Harkness lessons in Key Stage 5, yet the reliability of the representative nature of Harkness lessons can be questioned: Teacher A and I have adopted the pedagogy fully and use it very regularly so our Harkness lessons differ in quality and style to those delivered by colleagues in a more summative manner less often.

3.4 Ethical Considerations

This research and development project was conducted within my own school and as a UK researcher in a British school overseas, Section 40 of the British Educational Research Association (BERA)'s *Guidelines for Educational Research* (2018) applied; the ethical principles of UK research were adopted. Permission to conduct the research was sought in writing from the school and once granted, the planned research was discussed in detail with the Deputy Head Learning and Teaching (DHLT): the ethical considerations of the research upon my students, the other students who might participate and the colleagues who chose to collaborate in the research were considered, along with the instruments for collecting the data. The planned project then underwent ethical clearance through my supervisor and CUREC; ethical considerations and instruments for data collection were approved (Reference ED-CIA-18-234) and no changes were made subsequent to this. This approval was sought very early on because the research commenced at the very start of the academic year with the pre-intervention Phase 1 data collection.

Because this research and development project was focused directly upon students, the nature of the participants was the main ethical consideration (Cohen et al., 2011). Focusing on students over the age of 16, and following Sections 23-25 regarding consent (BERA, 2018), meant that the school and I deemed these students able to make their own decisions to participate, 'commensurate with their age and maturity' (p. 14). As an employee, rather than an external researcher, I did not have to contact parents directly, although the DHLT wrote to parents in advance informing them of wider research in the school due to NPQSL/ML and MA/MSc projects.

The participants were all given a comprehensive explanation of the nature and purpose of the research, how it was going to be conducted and how their data was going to be used and kept in accordance with Section 9 (BERA, 2018). This information was provided in a letter that explained informed consent and cited Sections 8 and 31 of BERA's (2018) guidelines. Whilst participation in lessons was not optional, the students were given the choice to opt out of completing the questionnaires or declining to have their observational data used or to participate in the terminal interviews; no-one declined or withdrew at any stage. The letter also made clear to students that the data being collected was for the school's use, as well as for this project, but that confidentiality and anonymity would be maintained as per Sections 28 and 40 (BERA, 2018).

Ethical consideration was also given to my dual roles as teacher and researcher and the 'power relationships' that might arise (BERA, 2018, p. 13). This potentially created an issue regarding the data gathered given my close professional relationship with the participants, as well as the power differential, with students perhaps feeling obligated to participate in the research out of a sense of duty (despite being aware of their voluntary informed consent) or because they were eager to please. Due to the interpretative paradigm adopted there is also the limitation of perception and interpretation from my side when basing my research upon students I came to know well, although as Shwandt suggests, 'all research is interpretive' (2000, p. 210). Therefore, I used anonymous questionnaires to reduce the impact of the power differential and in lessons the professional relationship between teacher and students

was largely unaffected, although arguably mapping lessons may initially have affected students' behaviour. The interviews were inevitably affected by the power relationship and I was mindful of the extent to which students felt a need to say what they thought I wanted to hear.

An issue that impacted the writing up of the research and development project was that the focus of this project is deeply rooted in my school's development plan and my findings would be read and used by the school. Aside from making sure no student from the Year 13 English class was identifiable through observational or interview data, candid comments about subjects and lessons in response to the open questions on the Harkness questionnaire (HQ) required sensitive handling. The raw data was deleted upon submission and the school was provided with an anonymised data summary for its own use in researching the impact of Harkness lessons. A wider ethical consideration concerns the possible identification of the school and, by association, the pupils in my class on whom this research focused. Removing all references to context hopefully reduced the likelihood of this, although the use of Harkness by the school has been publicised in our educational context.

Whilst the considerations above focus on possible negative impact on participants and audience, it should be noted that adopting this pedagogical approach could be seen as helping students, equipping young people with the skills that we think will benefit their future lives. Consequently, the intervention should also be considered in a beneficial, edifying light rather than simply focusing on possible detrimental ethical impact.

3.5 Instruments

The data gathered during the three phases was a combination of quantitative and qualitative. I decided to adopt a pluralist approach because I wanted a discrete measure of confidence growth alongside more descriptive data that explained how that growth manifested itself; the pluralism was driven by my research questions rather than methodological preferences (Cohen et al., 2011, p. 23). By using triangulation I hoped the data generated from the different instruments would have concurrent

validity (Cohen et al., 2011; Denzin, 1970), yet such triangulation does not necessarily increase validity, reduce bias or bring objectivity to the research (Cohen et al., 2011; Fielding & Fielding, 1986). However, Gronlund (1981) suggested that validity was not an absolute state, more of a degree and Onwuegbuzie and Johnson (2006) posed that 'legitimation' rather than 'validity' was more appropriate for mixed method research. Bearing all this in mind, I took steps to maximise validity and reliability where I could with each instrument by using online platforms, colleagues pushing for high returns in completion and a focus on reducing my bias when interviewing.

3.5.1 Questionnaires

I decided to use two questionnaires in order to gather both quantitative and qualitative data. The questionnaires had very different foci: one was quantitative, producing a numeric score for students' assertiveness based on questions that were not learning specific, whereas the other (HQ) was learning-focused and it was both quantitative and qualitative to provide 'illuminating components' (Bryman, 2007, p. 8) and richer data. By using both I hoped to measure the *what* (a change in confidence) whilst gaining answers to the *how* and *why* elements of my overarching project question. Both questionnaires were completed anonymously through online platforms via links issued so the respondents were un-traceable (Cohen et al., 2011) in the hope that this would provide more honest responses to the questions.

The first questionnaire was a pre-validated Assertiveness Formative Questionnaire (AFQ) developed by the Research Collaboration lab within the University of Kansas Center for Research on Learning (Gaumer Erickson & Noonan, 2018). Whilst the questionnaire measures assertiveness rather than confidence, its questions were designed to measure proficiency in the two components that the authors had defined as being essential to being assertive: 'expressing your wants, needs and thoughts whilst respecting others' (Gaumer Erickson et al., 2016, p.1), components which the literature identified as Harkness outcomes. The essential components of self-expression and respect for others are key skills in Harkness lessons so I hoped to see if students' confidence could be measured quantifiably across the year by using a pre-validated

survey. Comprising 20 questions, 13 measure self-expression and the remaining 7 measure respect for others; participants rated themselves on a 5-point scale for each question, achieving a scaled score out of 100 for the two categories and an overall score out of 100. The reliability of the questionnaire was established 'using Cronbach's coefficient alpha with 2,071 5th through 12th grade students' and its overall assertiveness score was found to be 'moderately reliable (20 items; $\alpha = .733$)' (Gaumer Erickson et al., 2016, pp. 2-3), perhaps reflecting the variability of self-reporting.

Delivery of the questionnaire pre-/post-intervention was necessary to measure any change, so the questionnaire was used in Phase 1 and repeated by the same participants in Phase 3. Because Phase 1 took place at the start of the academic year, initial collaboration was limited to two teachers who I knew were intending to use Harkness regularly, Teacher A and the DHLT, as a result three other classes in two subjects took the questionnaire along with my own Year 13 English class. To maintain anonymity whilst enabling the different classes to be identifiable, my colleagues were issued a series of codes and a comprehensive set of instructions (see Appendix B). The codes were drawn out of a bag so that no teacher knew which code referred to which student. The students were then asked to record their code for use again in Phase 3. The questionnaire was administered online using a link generated through the Research Collaboration website; students used their own devices at the start of a lesson and completion took less than 10 minutes which meant that teaching-time was not affected significantly.

The advantage of using this questionnaire was that it had already been carefully designed and validated, its administration was quick due to its online platform and data was downloaded afterwards in a single .csv file for analysis. The data generated was valid due to the questionnaire being controllable, replicable and objective (Cohen et al., 2011, p. 180), although it could be argued that replicability might be difficult when students self-report on a rating scale.

The HQ was designed with a specific focus upon Harkness lessons. The questions asked required the students to report upon their own confidence and were designed to help answer my research questions and triangulate with the results from the AFQ,

observational data and interviews to answer the project's overarching question. Combining dichotomous funnelling questions (Cohen et al., 2011) and open questions with comments boxes, it sought to quickly gather a large snapshot of views that would be descriptive but enable analysis to establish correlation and relationships between data (Edwards & Talbot, 1997, p. 32). No questionnaire is perfect, but I tried to eliminate bias when constructing the questions and Teacher A and I made sure they proceeded in a logical manner with some being conditional on previous answers.

The HQ was delivered online through SurveyMonkey® because it afforded a ready-made platform through which colleagues could easily administer the data collection: the HQ was accessible via a QR code so students completed it anonymously on their own devices which hopefully elicited honest responses (Menter et al., 2011). It was delivered in two waves, first to the Year 13 classes prior to their study leave departure and then two weeks later to the Year 12 classes when they returned from summer examination study leave. Using the SurveyMonkey® platform enabled a large volume of data to be collected quickly in one place, although errors in completion or misinterpretation of questions could have impacted the data.

The sampling for the HQ differed to that of the AFQ in that extra classes were invited to participate. Subsequent to Phase 1, other colleagues in the Harkness CLG started to use Harkness more regularly and in Phase 3 we collaborated to capture their students' perceptions too to provide a wider context to the data from the Year 13 English class and to see if patterns emerged across subjects and cohorts. As a result, seventy-seven students from Years 12 and 13 from nine classes across five subjects took the HQ in Phase 3.

3.5.2 Observations

For Phase 2 of my research I recorded ongoing observational data with the Year 13 English class from September to April in the form of maps (diagrammatically tracking participation). Initially I did this by hand on paper but mid-way through the first term I discovered Equity Maps® and from that point mapped using their iPad application. Electronic mapping enabled me not only to track the discussion, but to account for silence or teacher talk. The application also produced analytics for each mapped

lesson, so I could also start monitoring the overall equity quotient and how equal participation was in terms of length and frequency. The maps are an element of the pedagogy, although some Harkness teachers do not map their lessons (Golay, 2015), so they soon became normal practice for my class. Initially they felt under scrutiny and when the electronic method was adopted and the analytics shared in our class OneNote notebook students became very aware of everyone's participation levels which may have incentivised some to speak up more and others to speak less.

The purpose behind the observational data lay at the heart of practitioner research, by mapping the discussions I could reflect on what worked well and what did not each lesson, I could see students' progress across lessons, identify when seating arrangement had an impact and consequently assess the lessons' efficacy using professional judgement and the maps. It was therefore a dual-purpose instrument: informing my own practice each week whilst providing analytics for this project. Out of all the instruments, however, this was probably the least reliable due to the subjectivity of mapping: my interpretation of what was said and my accuracy at attributing utterance to the right students when the discussion went at speed may not have been consistently accurate, exemplifying Golay's (2015) suggestion that mapping can distract a teacher who should be concentrating on the discussion – multi-tasking could have affected my mapping.

3.5.3 Interviews

The Phase 3 interviews were the last instrument to be used because they were dependent upon observational data analysis. By tracking the participation levels of students through the lesson maps, I tabulated contributions (see Figure 4 on p. 45) and identified students for the interview sample. I selected the two students who contributed the most, one who had made progress and the two who had spoken the least and might therefore be negative cases in the sample (Cohen et al., 2011). These students were not necessarily representative, but by interviewing a cross-section of the class I hoped to find answers to my research questions.

I decided to interview the students 1:1 in the hope that their answers might be more honest without a peer present. Whilst I was aware of the power-differential, I

could not know whether the students agreed to be interviewed out of a sense of duty, or said the answers they thought I wanted to hear to please me. The interviews were semi-structured: I prepared twelve questions which were designed to provide evidence for each of my research questions and I made sure that these questions were delivered word-for-word in each interview to increase reliability. I also added questions in response to answers given, either eliciting further development of an answer or exploring an issue that they raised. Interviews are prey to issues regarding researchers' interpretations (Kvale, 1996) and Denscombe (1995) suggests interviewer neutrality is a chimera so in order to reduce the halo effect (Cohen et al., 2011) I recorded the interviews to prevent mis-representation in hand written notes, this also afforded eye contact to be maintained. The interviews took about 10 minutes each, so they were not time-consuming for the students who were departing on A Level study leave and transcribing them was not too big a task either.

3.6 Collaboration

The Harkness CLG was involved at the outset when the nature and scope of the proposed project was explained; colleagues' questions helped to narrow the focus of the project before it began.

Delivery of the Phase 1 and 3 AFQs was conducted in collaboration with Teacher A and the DHLT who were teaching Harkness regularly enough to start measuring its effect. The HQ draft was also discussed and revised with Teacher A and the DHLT to garner their opinions on the questions being asked based on their own Harkness teaching experience.

The Phase 3 HQ was delivered by five colleagues, all from the Harkness CLG; they did not collect observational data though, nor were their students interviewed as part of this research. Teacher A and I then looked at the raw data together, creating a Harkness score for the AFQ and identifying patterns that emerged in the HQ.

3.7 Data Analysis

The AFQ required an initial download of the data into an Excel spreadsheet for analysis. The raw data provided three scores for the students (self-expression, respect

for others and overall assertiveness); the first two categories were scaled to be out of 100 and the overall score was a total out of 100 (20 questions were scored out of 5). To these scores Teacher A and I added a fourth category by creating a new formula to extract data regarding skills we deemed to be Harkness-related, scaling the average of eight questions that related to skills and behaviours necessary for effective participation in Harkness lessons (shaded grey in Appendix E) to a score out of 100. These scores were then extracted and tabulated for comparisons to be drawn across classes, cohorts and gender.

For the HQ the raw data from the SurveyMonkey® platform was extracted in Excel format for analysis. The website enables filters to be applied to the results prior to downloading them so I filtered out the Year 13 English class' results (they had a different collector code for identification) and then extracted Year 13 data separately from Year 12, and by individual subject too. However, because some Year 12s experienced Harkness in more than one subject it was impossible to filter their data accurately into subjects for comparison. The responses to open questions were categorised and transferred to a table with separate columns for each research question.

The observational data required visual analysis (progress patterns could be seen by looking at the maps and participation on the initial paper maps had to be counted) and tabulation based on the analytics for each map. The Equity Maps® application provides charts for each lesson as well as numeric values, but they cannot be extracted. Consequently, I had to manually tabulate participation and equity quotients into an Excel spreadsheet for comparisons to be made and patterns to be identified.

The analysis of the interviews required initial transcription using voice recognition software by listening to students' responses on one device and repeating them to a second device. Once transcribed I extracted evidence from the students' responses into a table that had separate columns for my research questions, combining it with the comments made in the HQ.

4 Findings and discussion

4.1 Does student confidence increase?

The data from the AFQs for the Year 13 English class showed a mean increase in overall assertiveness of 2.7 when comparing the Phase 1 and 3 captures, with the mean assertiveness score (scored out of 100) rising from 74.7 to 77.4 (see Figure 2).

Class	Phase 1	Phase 3	Change
Year 13 English (n=11)	74.7	77.4	2.7
Year 12 Mathematics/FM (n=27)	69.6	73.7	4.1
Year 12 Geography (n= 7)	71	68.7	-2.3

Figure 2: Overall assertiveness mean scores and changes

The rise is arguably a small one, but put in perspective, when the AFQ was tested for reliability on 2071 students by Erikson and Noonan (2018), the results when converted to a 100-point scale had the top quartile range at 75-100. This means my English class' initial assertiveness mean score was already a very high one, so increases were likely to be small in the upper range. Given the small size of my class, a comparison to the wider data of Teacher A's Mathematics/FM and the DHLT's Geography Year 12 classes helps to show a clearer correlation when the context of Harkness use is considered. The change in the Mathematics/FM classes was more significant, whilst it started at a lower point in Phase 1, the greater change may have been due to the radical shift in lesson style: humanities lessons are often discursive in nature, but a focus on dialogue in Mathematics is less common, as Wolfson identifies (2015), so it may have had a greater impact. Also of note is that the English and Mathematics/FM classes had regular Harkness lessons whereas the DHLT only used it as a summative lesson at the end of topics in Geography. This illuminates the findings somewhat: the two classes regularly learning through Harkness lessons both showed an increase in mean assertiveness whereas irregular use of Harkness lessons perhaps had less of an effect on students' assertiveness, this reflects Williams' views (2014) that Harkness needs to be done regularly to be truly effective; students who experience didactic instruction regularly would struggle to switch into leading the learning occasionally. This is why Williams (2014) suggests that it is not a teaching *method* because that would suggest

it is a style to pull out of a toolbox when required, when it should be used regularly if you have adopted it as your pedagogical philosophy. However, the DHLT noted that some of the Year 12 Geography students started the year overly self-confident with some dominant egos and voices around the table. Consequently, the Phase 1 mean score may have been over-reported by the students who perceived themselves as confident, with the Phase 3 score being an adjustment back once they had found their place within the class and reflected upon their approach to learning. Another possible interpretation is that Harkness lessons equalised the dominance of some of the students, causing them to adjust their behaviour in order to facilitate a more inclusive learning environment. This interpretation echoes the literature's suggestion that Harkness lessons encourage co-operative learning with equality, democracy and the suppression of egos (students and teacher) being a noted outcome (Backer, 2016; Kurtz, 2015; Tingley, 2009).

Drilling further into the individual assertiveness scores, the Year 13 English class all increased their assertiveness score bar one male respondent (see Figure 3) whose score dropped by -13. This student's Phase 1 score was very high indeed (90), an outlying score when compared to the whole data set whose mean score for Phase 1 was 71.8.

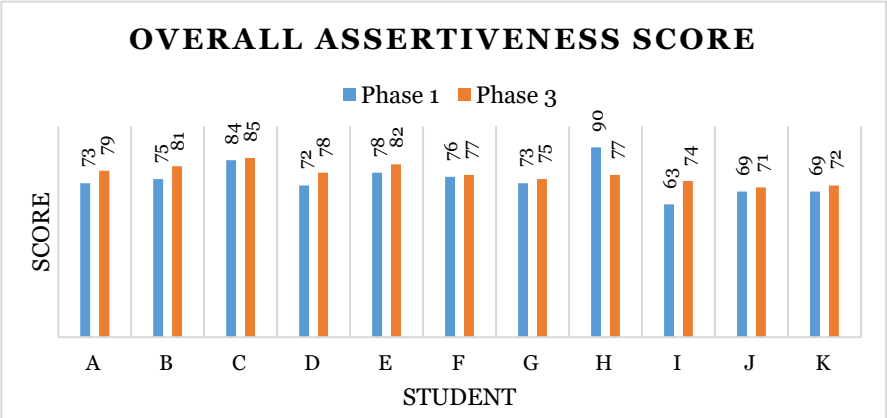

Figure 3: Year 13 English class assertiveness scores

Looking at the wider data, the next highest Phase 1 score was 85 from a Mathematics/FM student whose Phase 3 score also dropped, by -8. These high Phase 1 scores and significant drops in Phase 3 are perhaps due to the same reason the Geography class lowered their mean score (possible initial over-reporting) or because the format of Harkness lessons may have affected their confidence if they were used to

asserting themselves in linear layout classrooms, an adjustment that from Gong's (2015) own experience is very hard for some students to transition to. As well as the big drop in Student H's assertiveness score in Figure 3, Student I made a large increase from 63 in Phase 1 to 74 in Phase 3. This increase in assertiveness is the largest across the whole data set and might also be due to the reliability of self-reporting with the student under-reporting at the outset. The very nature of self-reporting does call into question the reliability of all of the questionnaire data, albeit it is valid in so far as it is the students' perception of their confidence and the factors that influence their learning (Cohen et al., 2011). However, when the other instruments' data is considered alongside the AFQ results, a female student reported in both the other Phase 3 data captures (anonymous HQ and the 1:1 interviews) that her confidence had increased this year and that Harkness lessons had been a factor in this increase. The correlation through triangulation would suggest that this increase is valid, or legitimate (Onwuegbuzie & Johnson, 2006). Therefore, assertiveness can be said to have increased in the seven months Harkness lessons were used, illustrating the increase in confidence seen by Trafford (2015) and the teachers at PEA (Cadwell & Quinn, 2015) in their lessons.

The HQ data corroborates the findings of the AFQ. Question 4 of the HQ asked students if their confidence had increased over the course of the year, 74% (n=57) of the 77 respondents said 'yes', of which 64% (n= 38) said Harkness was a contributor to this increase; these students were then asked to explain *how* Harkness had contributed to this increase in Question 17. One student stated that 'it has made me confident in the way I speak and made me feel good about myself', another that they feel 'more confident to speak out more' and one student said that through Harkness you 'naturally get more confident', a view echoed by a number of other respondents. The suggestion that Harkness lessons 'made' the students' participation (and confidence to participate) increase, exemplifies the views of Sneedon (2015) and Kennedy (2017, 2018) that the nature of Harkness lessons makes students contribute more.

The interview data from Phase 3 also reports that confidence increased with Student 3 seeing that they had become more confident in expressing their ideas in

lessons, having identified as more of a 'note-maker' previously, and Student 6 thought that they had increased in confidence for a while but that external pressures and an increased workload across subjects had led to a regression, they did, though, state that Harkness had helped them become more assertive in a role outside of the classroom where they felt they had new-found confidence to voice their ideas. However, Students 5 and 8, identified from the Phase 2 data as highly active participants, reported different thoughts regarding confidence. Student 8 stated that they 'have always been confident' and that Harkness did not change that either way and Student 5 felt that whilst they 'have always been quite confident' Harkness made them more confident that their ideas and views are received well and 'lead to a better outcome', a view shared by another student in the HQ who said 'Harkness has lessened my nerves and encouraged me to trust my ideas', alluding to the comfortable learning environments of Holley and Steiner's study (2005).

These findings from Phases 1 and 3 not only present an increase in confidence, but they start to reveal the ways in which this confidence is manifested. Whilst the data is self-reported and students' ideas about their own progress and confidence are inherently subjective, indeed the interviewees may have reported positive change because they thought that was what I wanted to hear, it is the students' experiences in response to the intervention (Cohen et al., 2011; Denscombe, 2008). The findings sit alongside the outcomes identified in the literature: Harkness lessons develop students' confidence to share their ideas with their peers by creating an environment in which they feel encouraged and safe to do so (Abbott-Jones & Spencer, 2015; Cadwell & Quinn, 2015; Mullgardt, 2008; Trafford, 2015); participation and environment will be discussed further in response to the other research questions. Student 5's response regarding confidence also alluded to the effect and impact of their contributions, drawing parallels to ideas in the literature regarding the valuable construction of shared knowledge and an awareness of their own learning and agency (Brownback, 2015; Straw et al., 2015).

4.2 How does student participation change?

The most visible, and most reported, change regarding participation was students speaking more. In the HQ, 70% of the Year 13 English class felt that their participation in lessons had increased with 100% of these students stating Harkness was a contributing factor. The three students who felt their participation had not increased correlated with the interview data where Students 5 and 8 stated that they had always contributed and Student 6 stated that their contributions had briefly risen before being negatively affected by their workload. Comparing this data with the wider cohort, 84% of HQ respondents reported an increase in participation with 63% identifying Harkness as a cause. This lower attribution to Harkness contrasts with the primary focus group but this difference may again be due to the regularity of Harkness for the Y13 English class who could confidently ascribe the impact of Harkness upon participation, an impact the literature supports (Cadwell & Quinn, 2015; Williams, 2014), whereas the wider cohort comprised classes who had irregular exposure to Harkness lessons.

The open questions on the HQ generated a rich data set of responses regarding the impact of Harkness lessons upon students' learning with more than two thirds of the respondents' answers mentioning an increase in participation. Common answers articulated being encouraged, or feeling more confident, to share ideas or voice opinions with a number referencing prior passive or reticent behaviour: 'I am no longer afraid to speak up', 'it has made me speak up…I am usually quiet' and 'I have become better at voicing my own opinions'. Respondents were very aware of their own participation in lessons with a number referring to their learning as now being more active and acknowledging that their increased participation had extended to 'normal' lessons in other subjects, an impact acknowledged by Students 3 when interviewed. Student 3 said that they felt they had started to talk more in two other subjects, having previously been happy simply to listen. This contrasted with Student 11, however, who said that they were talking more in English, but that it had not increased their participation in other lessons. When asked why, their reason related to the environment, an issue that Student 5 raised in their interview regarding their quieter

peers: 'it's hard for some to switch the dynamic between lessons…in one lesson they are told to be quiet and listen and then in another they're told everyone's equal, talk now, it's hard'. This again raises the issue of regularity of exposure to dialogic lessons, the dramatic contrast between monologic and dialogic environments leads to some students, like Student 11, adopting specific behaviours for specific lessons.

The literature identified a tension between being encouraged or forced to speak in Harkness lessons (Kennedy, 2017, 2018; Sneedon, 2015) and this division was evident in the data from the HQ too. Many respondents referred to being 'encouraged' or 'motivated' to speak more yet a few suggested that the pedagogy 'puts pressure on greater involvement' because 'with fewer people there you are forced to speak'. This impetus is not necessarily viewed negatively though with one respondent stating that 'because you are forced to speak more you naturally become more confident to do so' with Student 6 saying in interview that the lessons forced them to participate 'but not in a negative way' and one of the Year 13 English class stated in the HQ that they 'have to be prompted much less now' as a result of the pressure to speak, pressure Sneedon views as 'subtle' (2015, p. 99).

The observational data collected in Phase 2 regarding participation levels shows an incomplete picture; the limitations regarding the collection of this data are discussed later. Figure 4 (with the students selected for interview shaded grey and the line between lessons 5 and 6 indicating the transition from paper to digital mapping) shows no clear pattern regarding students' participation levels. Looking at the selected students, Students 3, 6 and 11 do show a general increase in the number of times they spoke, a trend that Student 11 reported at interview: 'I'm definitely talking a lot more'. What this table does not show is that not only did Student 11 talk more often as the year progressed, but that the length of their utterances increased. Whilst Student 11 only spoke twice in lesson 13, they spoke for 3:02 minutes, only ten seconds less than Student 8 who made five contributions that lesson, this was a significant increase from their contributions in the early maps that often were only a few seconds long with the maps showing improved participation as Fradale (2018) suggested. Student 6 had acknowledged their decline in participation at interview and Student 3 also

commented on their dips in participation, they were motivated to participate by seeing maps which visibly indicated a lack of contribution, prompting a subsequent spike before dropping back again into their more quiet mode of learning: 'I tend to be more of a traditional note-taker…I don't like to talk too much normally'; Student 3 was therefore motivated to talk more by the public illustration of their participation, an effect identified in the literature as a consequence of mapping lessons (Hicks, 2017; Mullgardt, 2008; Smith & Foley, 2009).

	STUDENT										
MAP	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
1	4	3	1	1	5	1	2	5	3	1	2
2	4	4	0	2	4	1	4	5	2	1	0
3	6	5	1	5	8	2	4	9	2	6	1
4	Ab.	2	0	1	2	0	2	Ab.	2	1	2
5	8	4	3	5	7	3	8	5	2	5	Ab.
6	5	8	2	1	13	2	5	5	2	3	Ab.
7	2	5	5	3	2	2	7	8	5	Ab.	3
8	11	2	1	1	8	1	1	10	1	1	3
9	7	4	1	4	6	3	7	13	1	3	1
10	5	5	3	1	5	Ab.	5	5	1	Ab.	2
11	5	4	0	2	3	0	4	6	2	1	Ab.
12	2	Ab.	1	1	3	2	5	10	2	5	5
13	0	6	2	0	8	2	3	5	3	Ab.	2
TOTAL	**59**	**52**	**20**	**27**	**74**	**19**	**57**	**86**	**28**	**27**	**21**

Figure 4: Year 13 English class mapped lesson contributions

Further illustration of improved participation can be seen in the AFQ data which reports an increase of 4% in the self-expression scores of the Year 13 English class and 3.8% for the Mathematics/FM class. These are significant lifts given the scores were already high, indicating that the students had become more able to express themselves publically, perhaps evidenced in their reporting of increased participation of lessons and the sharing of their ideas. Being able to express your ideas clearly and confidently is an important skill in dialogic classrooms, learning how to share your own views when you disagree with others' ideas (Mullgardt, 2008; Smith & Foley, 2009). This also links to the idea of healthy tension in a learning environment (Boostrom, 1998) with respondents in the HQ commenting that Harkness lessons have 'taught me to challenge peers' views', 'allowed me to look at two sides of an argument' and 'made me less afraid of others challenging my ideas'. Confidence in defending one's own views and critiquing those of others in a collegial way appears to have manifested itself in

the classrooms of those surveyed, a finding that echoes that of the literature which suggests that students learn these interpersonal skills in an environment that humanises them and mirrors the adult world (Boadi, 2015; Huynh, 2016; Mullgardt, 2008).

Collaborative and co-operative learning is another change that can be seen in the way students participate in their lessons. The data evidencing this is solely self-reported from the HQ and interviews, but it is encouraging that so many of the respondents identified collaboration as a key benefit of Harkness lessons. Potash (2016) wrote about students learning how to teach each other and the articles about Isaac Newton Academy also champion peer instruction (Abbott-Jones, 2018; Abbott-Jones & Spencer, 2015), a style of learning that our students acknowledge as being valuable too. In the HQ, students from the Y13 English class said that they were 'afforded new perspectives' and 'got greater insight' from sharing ideas around the table and that this in turn made them think more deeply. These views were echoed in the wider cohort data with over half of the students referring to sharing ideas, modulating understanding in light of hearing others' views and bouncing ideas around the table. One student said that 'the collaborative of Harkness is its strength', valuing a co-constructed approach to learning that echoes current proponents of dialogic learning (Alexander, 2017; Mercer, 2000). Student 11 said that it was 'good to know what others thought' about the texts being discussed and the essays being planned and Student 6 said that the collaborative nature of the lessons made them want to get new ideas and give their own input, that it was 'like a discussion amongst friends'. This response alludes to the environment again, the fact that Harkness lessons for the Year 13 English students were similar to 'a meeting place, a forum' (Boadi, 2015), a relaxed space to share and discuss ideas where, as Geary and Atif suggest (2015), they learn as much from one another as they do from textbooks or teachers.

Working together to co-construct knowledge requires a balancing of equity around the table. Whilst the AFQ data showed an increase in assertiveness and the sub-score of self-expression for the Year 13 English class and the Year 12 Mathematics/FM classes, the Year 12 Geography class decreased in both scores. The

self-expression score fell -6.6%, a large decrease compared with the 4/3.8% increases of the other classes, but as discussed earlier with regard to the overall score, this drop may be due in part to initial over-reporting by some of the male respondents – with the questions that affected the overall score being the ones used to determine the self-expression score – or it could be a balancing of behaviour around the table with the more dominant students learning to modulate their participation, supressing their behaviour to facilitate more effective discussions. Learning to work effectively with peers is a necessary Harkness skill (Brownback, 2015; Cadwell, 2015) and whilst some students reported in the HQ that 'everyone is given a chance to contribute and play their part', inequity is a concern for both students and teachers alike. The equity quotient generated by the Equity Maps® application showed a gradual increase across lessons prior to each hiatus, suggesting that consistent progress was made with each re-start of Harkness lessons, but that significant breaks disrupted the equity of the Year 13 English class. The participation data generated by the maps reflected this with Students 5 and 8 dominating the number of contributions made each time Harkness resumed after a break. At interview Student 3 and 11 suggested that initially some students dominated lessons, with Student 3 defending their low participation rate by suggesting they found it hard to 'jump in', a sentiment echoed by Student 6 who said that the speed of discussion often moved too quickly for them to contribute their ideas.

In the HQ other students from the Year 13 English class made similar comments, that they 'struggled to get a word in sometimes' and that 'it can be hard to get a chance to speak' yet Student 5 at interview acknowledged that it was an environment that encourages equality yet was unequal, criticising peers for not contributing due to a lack of preparation, reticence or selfishness. They identified a disparity of contribution around the table that frustrated them because at times they felt a burden to generate ideas at the cost of being seen to dominate. The literature would suggest that the teacher is perhaps responsible here for facilitating the equity of participation (Backer, 2016; Kurtz, 2015) and in hindsight perhaps I should have stepped in, yet this is a good example of the tension Foley (2015) describes, knowing when to interject is difficult, particularly if the students who reported an impediment to participation gave no clues that they were trying to join in; Boadi (2015) suggests

that students have to take responsibility for joining the discussion by giving clear non-verbal signals that they wish to participate. Despite the views raised by my Year 13 English class, the wider cohort felt that whilst some students occasionally dominated, others had the confidence to speak up where previously they would have let others take control. Enabling the students to learn to lead and manage their own discussions is an important part of the Harkness philosophy and it takes time for them to develop this ability to subsume themselves within a group that they self-direct (Moore, 2015; Pérez-Andreu, 2015), time arguably not afforded by this short-term intervention.

Aside from how much or which students participated, the manner in which they participated shifted too. The Year 13 English class reported 'greater peer engagement' and 'increased interest in lessons' in the HQ with other students adding the caution that discussions can be difficult 'if everyone isn't engaged'; as Kennedy (2017, 2018) and Arnold et al. (1993) suggested, there is no-where to hide when seated facing one's peers so active participation is expected. Part of being more engaged is listening carefully and the AFQ data showed that for the Year 13 English set the responses to the two questions that related to active listening and listening to ideas you might not agree with either remained at a full score of 5 or increased across all the respondents. At interview Student 6 said that listening was very important and in the HQ students from the Year 13 English class said that they had 'become a better listener' and that Harkness had enabled them to 'stop and listen to others'. Brownback (2015) argues that the art of listening really matters, a view echoed by Perdomo (2015) and Pettigrew (2015) who suggest that learning to listen is hard but essential. The improvement in listening is supported by the change in Harkness skills scores in the AFQ. The questions that Teacher A and I selected to create a Harkness score encompassed these listening ones and across the classes that participated, the Harkness scores increased. Mathematics/FM had the largest increase (2.8%) with Geography following (1.8%). My Year 13 English class had a tiny increase of 0.7%, but given the discursive nature of English lessons this was to be expected, coupled with the fact that their Phase 1 Harkness score was the highest of all their initial scores: 82.5%. Alongside this score, questioning noticeably increased in my observational data with the coding of

utterances in the maps indicating an increase in questions and challenges during the Year 13 English lessons. Brownback (2015) suggest that the richest way to learn is through asking questions in Harkness lessons and my students certainly made this step during the intervention, challenging one another's ideas and identifying what they did not know when planning examination essays is something that Matlack (2015) views as a starting point for effective discussions.

The other key participation skill that could not be measured numerically through the AFQ was the role of silence in lessons. Looking at the observational data, the amount of silence quickly decreased across the mapped lessons as the students adjusted to the style of lessons and became less reliant on me to step in and support them. The frustration reported in the literature from students unused to the teacher remaining silent (Bergofsky, 2015; Orth et al., 2015; Smith & Foley, 2009; Trafford, 2015) appeared in the HQ from the wider cohort responses with a few students stating that 'silences are awkward' and that they affected the mood of the lesson because it was 'hard to restart with the teacher remaining silent'. This points to the advice given in the literature that teachers and students need to become more comfortable with silence and that it needs to be taught as a skill (Donarski, 2016a; Mullgardt, 2008).

However, some students in the HQ saw the benefit of silence with one student stating, 'silences make you think about something to say' and in interview Student 3 said that the silence in our lessons had become more comfortable with little pressure to speak and more time to think. This is no doubt partly due to the regularity of their lessons: they became more comfortable with one another and with the nature of the silences. The observational data shows that after the initial decrease, the amount of silence in lessons plateaued, but my notes show that the silences were visibly more comfortable with students thinking about what had just been said or making notes, as a group we had adopted Moore's approach of knowing 'the value – rather than the embarrassment – of our shared silence' (2015, p.71). It could be said that my students became just as comfortable not to participate because it gave them space to think.

4.3 Does prior preparation contribute to a growth in confidence?

The findings illustrate the features and benefits of prior preparation, as identified in the literature: greater preparation, independent learning, time management and an increase in knowledge (Bergmann & Sams, 2012b; Fulton, 2012; Roach, 2014; Straw et al., 2015). As the intervention progressed my Phase 2 observational notes and mapped coding of utterances track an increase in preparatory notes brought to lessons and the inclusion of evidence from homework articles within points. These observations indicate that the students became more engaged with prior preparation: reading the supplementary material and integrating it into class discussions, along with points from independent research, mirrored the growth that Orth et al. (2015) witnessed at Manchester Grammar School. Students quickly learnt that prior preparation was an essential part of Harkness lessons; the literature made clear that it is the groundwork for discussions (Donarski, 2016a; Hassan, 2015; Smith & Foley, 2009). My Year 13 English class were aware of this. At interview Student 6 independently identified that their dips in lesson participation correlated with when they had not prepared for lessons because basic points that had not been thought through fully in advance made little impact in the discussions. Student 3 stated that they quickly realised that in order to make meaningful points in the classroom they needed to do more outside of it and Student 11 said that if they had not prepared then they had nothing beneficial to contribute to discussions. The regular contributors, Students 5 and 8, acknowledged that whilst they could attempt to 'wing' a lesson unprepared and develop points spontaneously they were likely to be called out by a peer or be unable to make worthwhile progress in their learning. Student 5 went on to say that not only had Harkness made them prepare for English lessons more thoroughly, but they started preparing for all their subjects independently in a similar vein because they saw the benefit of prior preparation. The answers given by my class in the HQ highlighted the reason why they felt the preparation was necessary: 'coming to lessons more prepared makes me feel more confident to discuss what I know', I spend time thinking of ideas before class so that I can confidently share them and collaborate with my peers' and 'I prefer learning for homework, I feel better prepared to engage in learning in lessons'. Confidence to participate in lesson discussions was a

consequence that echoed across the wider cohort's responses to the HQ, they felt that they had a greater incentive to pre-prepare and that it was a 'good' use of time to maximise the collaborative benefits in lessons; this is the student-focused by-product of flipped learning, preparing in advance so that students can collaborate in the application and development of knowledge (Carpenter & Pease, 2012; de Araujo et al., 2017; Hamdan et al., 2013a), seeing the benefits of preparation made students more enthusiastic to learn (Christoph, 2015).

An increased responsibility for learning also came out in the findings. In the HQ a respondent stated that they had to prepare 'so that [they were not] left behind', another said that they have become 'more organised with [their] time' as a result of Harkness lessons. The pressure to keep up, however, did affect some students less positively. One of the Year 13 English students reported that 'if I have not prepared for a Harkness lesson then I get worried' and other students across the cohort said that their preparation was occasionally rushed because keeping on top of the A Level workload is tough. This is the downside of flipped learning: time is critical to adopt a prior preparation pedagogy and the students certainly had to buy-in and adjust their habits to accommodate the regular work and expect to be held accountable for completing it (Shaffer, 2016; Straw et al., 2015). I took on board the advice of the literature and issued preparatory work a week in advance (Moore, 2015; Orth et al., 2015), but demands from other subjects soon affected those less able to work efficiently. This external factor affected the participation levels of the Year 13 English class in the final two months of the intervention: subsequent to the March mock examinations, the workload across their subjects increased and many were evidently affected by the pressure to prepare for their high stakes assessments. Participation in lesson 11 (see Figure 4), the week after their mock examination results, was very low and students were noticeably distracted and less engaged as a result of external pressures. Juggling time and external factors was hard but at interview Students 5 and 8 both said that they had become much more independent in their learning with Student 8 saying that they had taken greater initiative to manage all their demands. This positive outcome was also identifiable in the HQ data: 90% of my Year 13 English class (92% for the rest of the cohort) said that they had become more independent in

their learning with all bar one of those students identifying Harkness as a major cause for this. This increase corresponds with the literature which suggests that prior preparation (either for Harkness or flipped learning) increases students' independence of thought and action (Abbott-Jones & Spencer, 2015; Clarke, 2015; Fulton, 2012; Huynh, 2016; Pettigrew, 2015; Smith & Foley, 2009; Trafford, 2015).

What the prior preparation enables students to do, both before and during lessons, is to build and expand their knowledge. Reassuringly, all respondents to the HQ said that their subject knowledge had increased over the year with 80% of the Year 13 English class and 86.36% of the Year 12 respondents suggesting that Harkness contributed to this increase. Looking at the open question responses to enrich these figures, students suggested that Harkness lesson preparation and discussion went beyond the syllabus content, uncovered new areas of interest to explore, enabled 'deeper understanding through discussion with peers' and were more about 'discovery' than passive learning, directly echoing Clarke's views on the value of independent discovery of knowledge (2015). The words 'depth', 'deeper' and 'breadth' in relation to knowledge were used by more than half the respondents who appreciated that discussions with peers enabled them to 'explore content fully' (Student 6). Enabling students to prepare material in advance independently and then explore it in lessons collectively, combats the rote-learning, monologic transference of knowledge and gives them the deeper understanding and ownership that comes from self-discovery (Geary & Atif, 2015; Lee, 2001; Pettigrew, 2015; Thompson, 2009).

4.4 Does the environment contribute to students' growth in confidence?

The nature of Harkness lessons – the confidence that grows through prior preparation, increased knowledge and participation in discussion – creates an environment that enables students to grow in confidence, as has already been discussed, but the findings also shed light on the effect that the table and atmosphere can have upon students' confidence.

The literature about the impact of a round or oval seating arrangement, with or without a central table, suggests that it connects students and their teacher, fosters interaction and creates a more egalitarian learning space (Gremmen et al., 2016; Kennedy, 2017; Sneedon, 2015; Stannard, 2016; Wolfson, 2015). The respondents to the HQ concur. When asked to make a dichotomous judgement on the impact of the room layout on their learning, 81.81% said that it had a positive impact. This was corroborated with comments such as 'sitting facing each other makes it easier to speak up and share ideas', echoing the research of Harvey and Kenyon (2013), and at interview Student 3 said that the table had a psychological impact, making them all feel more comfortable and Student 6 said it 'really connected everyone and strengthened their learning'. Student 11 elaborated further by saying that being able to see everyone enabled the more dominant students to see when other wanted to speak. It is interesting to note that 84.09% of the Year 12 respondents said that the room layout had an impact on their learning and such a response is perhaps down to the shift from large classes at Key Stage 4 in traditional layouts to smaller Keys Stage 5 classes in seminar layouts; the change in room layout was more significant for them than for Year 13.

Unsolicited, responses in the HQ made comparisons to the environment of traditional classrooms, saying that Harkness lessons made them 'more active in their learning', that the style of lesson was a great change to 'the monotony of teacher-centred learning' and that they were 'less daunting than teacher-led lessons'. Yet respondents from the wider cohort also said that they 'prefer normal teaching styles' and that they 'find it easier to absorb information during traditional lessons' with only 52.27 % of Year 12 and 39.13% of the wider Year 13 cohort preferring Harkness lessons. However, in the Year 13 English class, 80% said that they preferred Harkness lessons to traditional lessons, with one student stating that 'I think they've been extremely beneficial…I think they should be implemented more widely around the school'. This division in opinion can be contextualised again by the regularity of Harkness lessons that the students had been exposed to: the Year 13 English class had bought-in to the pedagogy and through regular exposure to genuine Harkness lessons they were appreciating its impact. At interview Student 5 said that they learnt a lot more in

Harkness lessons than in normal lessons due to the collaborative nature of the discussions, but that rote learning in other subjects was easy because it was 'habitual'; Student 8 said that they wanted Harkness lessons in all their lessons because they are 'better than copying'. Whilst this alludes to the literature's findings that traditional, teacher-led lessons dominate secondary classrooms (Alexander, 2017; Gremmen et al., 2016; Mercer, 2000), it does also suggest that some student prefer traditional layouts and styles, that they want to be more passive in their reception of knowledge, perhaps unsurprisingly in a high stakes terminal assessment curriculum, a finding from my previous assignments which corroborated literature regarding passivity in examination-focused students.

What students did agree on was that Harkness lessons foster a safe environment for learning that in turn leads to greater collaboration and the open sharing of ideas. Through my Phase 2 observations I saw a visible shift in the atmosphere around the table with the Year 13 English class becoming more relaxed and comfortable to sit in different seats. They reported this in the HQ: 'seeing the dynamics between people in the class I realised it was a safe place to voice your ideas' and 'it is a relaxing environment to learn in'. These views were echoed across the wider cohort with a number of students stating that the format of lessons afforded participation 'without fear of judgement'. At interview Students 3, 6 and 11 all commented on an initial 'fear of judgement' that soon subsided, with our lessons becoming 'pretty safe, [we] felt comfortable to talk'. This is the point that the environment literature repeated: an environment needs to be safe and comfortable for learning to be effective with students feeling protected from emotional or psychological harm (Holley & Steiner, 2005; Parsons, 2016); one Year 13 English student said in the HQ that 'the way my ideas were received and encouraged…made me feel confident in myself and comfortable to speak up'.

Respecting the participants in a discussion is a key principle of PEA with much of the literature from teachers there mentioning its importance to create a safe atmosphere (Cadwell & Quinn, 2015). The AFQ data had a third measure: respect for others. Looking at the change in scores between Phase 1 and Phase 3, all three subjects

saw an increase. The Y13 English class only increased by a mean of 0.2% but Mathematics/FM went up by 4.4% and Geography by 5.8%. The Year 13 English class had the confounding variables mentioned earlier of already recording a high Phase 1 score and also knowing each other very well and being used to a discursive, open approach to learning in English. The scores for the Year 12 Mathematics/FM and Geography classes, however, show a significant change which may in part be due to the balancing of personalities within sets, getting to know new classmates and starting to see and hear the work of peers. In the HQ, one Mathematics/FM student commented on the benefit of seeing each other's work on the walls in Harkness lessons; the open nature of Harkness lessons with knowledge being displayed and shared perhaps helps students to become more respectful of each other's' views and efforts (Hassan, 2015), or as Wolfson (2015) states, acknowledging everyone's dignity and the respect they deserve.

4.5 Other findings

Two other key findings emerged from the data that were not in answer to the research questions, but have implications for my own practice and the school's use of Harkness lessons.

The first concerns the use of devices in Harkness lessons. In interview Student 5 suggested that laptops would be a solution to the problem of making notes quickly in a fast-flowing discussion. This was an issue that had been commented on in the HQ with a handful of respondents citing note-making as a Harkness lesson challenge. The literature that mentioned technology in relation to dialogic learning views it as hindering dialogue (Parsons, 2016) and that laptops encourage isolation and individuality (Smith & Foley, 2009) in a classroom that encourages interaction and connection. Yet Student 5 felt strongly that used correctly, and they saw it as the teacher's responsibility to make sure that students participated in discussions if they had laptops, live notes in a collective document or application would be beneficial to students' learning, as would the use of video so that students could re-watch lessons

to get any notes that they missed, potentially freeing students from note-making during lessons.

The second suggestion that arose from both the Phase 3 interviews and HQ open question responses was that Harkness lessons need to be introduced earlier. All five interviewed students felt that introducing Harkness to Key Stage 3 would be beneficial, wishing that they had learnt to be more adept at dialogic learning earlier, before being conditioned by teacher-led or rote learning. This is something that Isaac Newton Academy have done, rolling Harkness lessons out from the bottom up with great success (Abbott-Jones, 2018; Abbott-Jones & Spencer, 2015).

5 Conclusions

5.1 In what ways does growth in student confidence manifest itself through Harkness lessons?

The findings suggest that growth in student confidence is facilitated by prior preparation and a safe classroom environment and manifested through increased participation, greater engagement in learning and increased preparation for lessons. The findings show an interconnection between the foci of the research questions with students reporting an increase in participation as a result of prior preparation, reflecting the views expressed in the flipped learning literature that prior knowledge makes students more confident in lessons (Bergmann & Sams, 2012b; Fulton, 2012; Roach, 2014) and being motivated by the demands of the discussion to prepare in advance, a motivation identified in the Harkness literature (Christoph, 2015; Hiza, 2015; Pérez-Andreu, 2015). This relationship is supported by the environment that Harkness lessons foster: the students saw the layout of the room as enabling greater interaction through connecting them around a table and enabling them to see each other, findings espoused by not only Harkness teachers but by studies into classroom spaces too (Arnold et al., 1993; Careena Fernandes et al., 2011; Gremmen et al., 2016). The ability to see and read peers' faces and cues enables students to participate in constructive discussion and it builds the respect for one another that makes the environment a 'safe space' (Holley & Steiner, 2005) in which they feel comfortable to share the ideas they have formed. According to our students, all of this leads to, and demonstrates, a growth in confidence.

5.2 Limitations

This project was idiographic and as such generalisations applicable to other contexts cannot be made. It also focused on a short-term intervention that was implemented regularly for the Year 13 English and Year 12 Mathematics/FM classes in collaboration with Teacher A, but only intermittently for the DHLT's Year 12 Geography class and the other classes whose teachers collaborated in the collection of data. Whilst its findings are therefore not representative of all Harkness lessons within our own school context, given the differences in Harkness lesson use and the individual classroom

styles adopted, it does at least identify trends across the classes whilst identifying key differences that arise through regularity of implementation.

A significant limitation that may have affected the data (particularly in Phase 2) was the nature of the Year 13 English class upon which the project focused primarily. This class contained an unusual collection of personalities and was very different from other classes I taught and issues external to the classroom arose during the intervention which did have an impact upon the participation of some students, which had a knock-on effect upon class cohesion. Coupled with mock examinations, coursework across a number of subjects and their impending A Level examinations, the focus of the class did oscillate and I questioned choosing them as my primary focus group mid-way through the year. Observing other classes that were receiving Harkness lessons I saw noticeable differences and I was glad that I had collaborated with CLG colleagues for the data capture to provide cohort comparisons.

A further limitation associated with their variability was the accuracy and reliability of the Phase 2 mapping data. Whilst the students had at least two full Harkness lessons a week, and a third dialogic but perhaps more teacher-led lesson, mapping occurred at best once a week but due to disruptions to lessons sometimes the gap between maps was larger. The problem that this presented was that the students' participation levels varied and the maps did not always capture a lesson of high participation from a usually reticent student or lessons where everyone spoke at length; the maps are snapshots and whilst valid, they are not fully representative of the participation levels of the less consistent students. Professionally I noted the improvement, but it was frustrating as a regular observer of all their lessons that the captured data does not always reflect a student's progress, nor does it explain factors that influenced the number of contributions.

Other limitations regarding data collection included the time gap between the Phase 1 and Phase 3 data: the optimism at the start of the academic year perhaps affected the Phase 1 data whilst capturing Phase 3 just as Year 13 were departing on study leave and Year 12 were returning from their summer examinations perhaps resulted in more

negative reporting. An issue also became apparent with the initial questions on the HQ that did not allow for students whose confidence was already very high; when interviewed, Students 5 and 8 said that they had selected 'no' for confidence growth but that they were very confident already so had not noticed an increase.

Collaborating to capture the Phase 1/3 AFQ data also presented a potential limitation for the data. Despite being told to record their codes somewhere safe and private, some students could not remember their codes for the Phase 3 capture. Whilst the students claimed to have worked them out amongst themselves, there is the potential for the data to have been mis-matched and perhaps this is a partial explanation for the decreases in some of the Geography scores and the large changes in a few of the other students' results.

5.3 Implications

The findings of this research and development project were presented at a whole-staff INSET morning at the end of the academic year with three groups of colleagues listening to a presentation on my research questions and findings. This generated a good deal of interest and will hopefully lead to greater uptake and new CLG members at the start of the next academic year. The findings will not only inform my own practice but will hopefully make colleagues aware not only of the benefits of Harkness lessons upon students' learning, but the issues that arise regarding delivery.

As a result of this project it is clear that as a school we need to focus on the quality of our Harkness lesson delivery. Whilst the pedagogy is one approach amongst many across the staff body, those who choose to deliver Harkness lessons should take heed of the differences that are highlighted by the data regarding regularity of use. Williams (2014) argues that Harkness needs to be a mind-set, a philosophy for a teacher, that it is not a method to occasionally apply and my research seems to support this viewpoint: the Year 13 English class who had regular Harkness lessons reported greater increases in confidence, participation and independence and were aware of the benefits such lessons had afforded them.

One consequence of this research was that my school sent me to PEA for a week to the Exeter Humanities Institute where I was able to experience all that the PEA literature espouses, that Harkness is a way of learning that underpins every structure in their school and that by applying it to all lessons in all subjects the students see dialogue and collaboration as the most humane way to learn (Cadwell & Quinn, 2015).

Consequently, this research and my PEA visit have affirmed that this is a pedagogy I plan to fully adopt, across all Key Stages in my ongoing practice. Through my SLE role and through collaboration with the Harkness CLG, I plan to design and deliver a series of INSETs that will coach and develop teachers wishing to use Harkness so that they feel confident and equipped with the knowledge to use Harkness lessons regularly rather than as summative stand-alone reviews; videoing my own lessons and those of Teacher A and the DHLT to support other colleagues will also be undertaken.

The call for Harkness lower down the school by the students interviewed, as well as my own observations from previous assignments that passivity rises as students move up the school, have convinced me that we need to focus upon supporting colleagues to include dialogic elements within their lower school lessons. Key Stage 3 students are generally enthusiastic and inquisitive and before external examination pressures start to affect them we should be helping them to master discussions, problem-based learning, independent research and respect for their peers. The literature's unequivocal message that a safe but challenging learning environment is essential for effective learning (Boostrom, 1998; Holley & Steiner, 2005; Parsons, 2016) dovetails with my school's current development of Positive Education. I plan, therefore, to collaborate with the Pos Ed SLEs and the Harkness CLG group to develop Key Stage 3 classroom tasks and activities that integrate positive education principles with the respect and collaboration that Harkness requires, enabling colleagues who do not wish to adopt Harkness lessons to at least start building dialogue into their classrooms.

The final implication from this project is the integration of technology into dialogic practice. Student 5's sincere request for the effective use of devices or shared platforms

in Harkness lessons, as well as the videoing of lessons, brings to the fore the demands of our educational context and the expectation that technology will be used in all lessons; a demand we have resisted in Harkness lessons so far, bar the use of the digital mapping application and the interactive whiteboard for delivering occasional content. Our country's national agenda calls for innovation in education and perhaps this is the next step for developing what was once a radical pedagogy and updating it for the demands of 21st Century learners, making technology-use collaborative and extending the discussion online.

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Appendix A – Assertiveness Formative Questionnaire (AFQ) (Gaumer Erickson & Noonan, 2018)

Research Collaboration

Questionnaire

Assertiveness Questionnaire

Please **CHECK ONE** response that best describes you. Be honest, since the information will be used to help you in school and also help you become more prepared for college and careers. There are no right or wrong answers!

Student ID_____ **Date** _____

	Not very like me → Very like me				
	1	2	3	4	5
1. I stand up to my friends if they are doing something I don't feel comfortable doing.	☐	☐	☐	☐	☐
2. I speak up when someone is not respecting my personal boundaries like "no cheating off my homework" or "I don't let friends borrow money."	☐	☐	☐	☐	☐
3. I often have a hard time saying "No."	☐	☐	☐	☐	☐
4. I express my opinions, even if others disagree with me.	☐	☐	☐	☐	☐
5. When an argument is over, I often wish I would have said what was really on my mind.	☐	☐	☐	☐	☐
6. I tend to just go along with what everyone else wants instead of stating my own thoughts.	☐	☐	☐	☐	☐
7. I sometimes avoid asking questions for fear of sounding stupid.	☐	☐	☐	☐	☐
8. I tend to bottle up my emotions rather than talk about my feelings.	☐	☐	☐	☐	☐
9. If I disagree with my teacher, I talk to him or her about it.	☐	☐	☐	☐	☐
10. If a person has borrowed money (or a game, clothes, or something else of value) and is overdue in returning it, I talk to the person about it.	☐	☐	☐	☐	☐
11. I'm usually able to tell people how I'm feeling.	☐	☐	☐	☐	☐
12. If I don't like the way someone is being treated, I speak up about it.	☐	☐	☐	☐	☐
13. I speak up about things I really care about.	☐	☐	☐	☐	☐
14. I am careful to avoid hurting other people's feelings, even when I feel that I have been wronged.	☐	☐	☐	☐	☐
15. I have a hard time controlling my emotions when I disagree with someone.	☐	☐	☐	☐	☐
16. I avoid attacking someone's intelligence when I disagree with their ideas.	☐	☐	☐	☐	☐
17. I listen to other people's opinions, even if I disagree with them.	☐	☐	☐	☐	☐
18. In disagreements, I make sure that I understand other points of view.	☐	☐	☐	☐	☐
19. In discussions, I communicate that I am listening through body language (nodding my head, avoiding rolling my eyes).	☐	☐	☐	☐	☐
20. Even in an argument, I don't interrupt the other person.	☐	☐	☐	☐	☐

Appendix B – Delivery instructions for colleagues

Assertiveness Questionnaire Round 2

Instructions for delivery

Please read out the following steps – this questionnaire will remain 'live' for all of May, so I do not want students to have a written copy of the URL and code in case they try to access it again.

1. Check if any students have already completed the questionnaire with another colleague ([redacted]) **this week** (if so, do not get them to repeat it).

2. Ask students to enter the following URL: **http://is.gd/rcsurveys**
   If there is a problem accessing the short version above, the full URL is:

   http://www.researchcollaborationsurveys.org/Graphing/surveyquestions.php

3. Ask them to enter the following hyphenated code: **12-4010** (this is different to last time)
   They cannot complete the questionnaire if they don't enter this code exactly as it appears (hyphen included).

4. They should then enter the code they were given previously in the box where is says **student number** (the code consists of 3 digits and 2 letters, e.g. 008EL).
   They need to use the same code and gender as last time so that their answers can be compared
   I have attached a list of the codes used by your students in round 1 with the gender assigned to help them narrow down their numbers…

   Please do not ask them their code – this questionnaire needs to be anonymous.

5. Please ask them to enter their **grade** (it's set up for American students so it needs to be one less):
   i.e. Y13 = Grade 12

   Y12 = Grade 11

6. Please ask them to enter their **gender** (might see if there are gender trends so ideally M or F, unless they strongly want to decline specifying a gender).

7. After entering their hyphenated code, student number, grade and gender, students simply hit ***Submit*** to begin the questionnaire.

The questionnaire comprises 20 questions and should take students approximately 5-8 minutes to complete.

Please let me know when you have completed it with your class(es).

Appendix C – Harkness Questionnaire

Q1 What year group are you in?

- **Year 13**
- **Year 12**

Q2 What is your gender (as registered at school)?

- **Male**
- **Female**

Q3 Which subjects have you experienced Harkness in?

- **Computer Science**
- **Economics**
- **English / English Literature**
- **Further Mathematics**
- **Geography**
- **Government & Politics**
- **History**
- **Mathematics**
- **Psychology**
- **Other (please specify)**

Q4 Has your confidence increased over the course of this year?

- **Yes**
- **No (move on to Q6)**

Q5 If you answered 'Yes' to Q4, has Harkness contributed to the increase?

- **Yes**
- **No**

Q6 Has your participation in lessons increased this year?

- **Yes**
- **No (move on to Q8)**

Q7 If you answered 'Yes' to Q6, has Harkness contributed to the increase?

- **Yes**
- **No**

Q8 Has Harkness led to an increase in your participation in non-Harkness subject lessons?

- **Yes**
- **No**

Q9 Have you become more independent as a learner this year?

- **Yes**
- **No (move on to Q11)**

Q10 If you answered 'Yes' to Q9, has Harkness contributed to this increase?

- **Yes**
- **No**

Q11 Has your subject knowledge increased this year?

- **Yes**
- **No (move on to Q13)**

Q12 If you answered 'Yes' to Q11, has Harkness contributed to this increase?

- **Yes**
- **No**

Q13 Has your written work shown improvement this year?

- **Yes**
- **No (move on to Q15)**

Q14 If you answered 'Yes' to Q13, has Harkness contributed to this improvement?

- **Yes**
- **No**

Q15 Do you prefer Harkness lessons to traditional teacher-focused lessons?

- **Yes**
- **No**

Q16 What impact does the room layout (one big table) have on your learning?

- **Negative**
- **Positive**

Q17 If you answered ‘Yes’ to Q5 (Has Harkness contributed to the increase in your confidence?), please explain how you think Harkness has contributed to your growth in confidence. If you answered 'No' to Q5, please move on to Q19.

Q18 If you answered ‘Yes’ to Q5 (Has Harkness contributed to the increase in your confidence?), please explain how you think your growth in confidence is evident (shown).

Q19 How has your learning benefited from Harkness? What are its positive effects?

Q20 What challenges has Harkness posed for your learning?

Q21 Are there any other comments you would like to make about Harkness lessons?

Appendix D – Interview Questions

Harkness Interview

Identifier:	

1. Do you think you have changed as a learner this year?
    a. Yes – How?
    b. No – Why?
2. Has Harkness played a part in your change? If yes, how?
3. How have you found Harkness lessons this year?
4. What influences your participation in Harkness lessons?
5. Does preparation affect your Harkness experience?
6. Do you think you have become more confident in Harkness lessons? Why?
7. Have your Harkness lessons affected your confidence in other subject lessons?
8. Would Harkness lower down the school have benefited your approach to learning?
9. Can a change in lesson style and format in Year 13 effect the way you learn? Why?
10. Do teachers affect your confidence in learning? Why? How?
11. Does the classroom environment influence your learning?
12. Is there anything else you would like to say about Harkness lessons this year?

Appendix E – AFQ Question Categorisation

I stand up to my friends if they are doing something I don't feel comfortable doing.	I speak up when someone is not respecting my personal boundaries like 'no cheating off my homework' or 'I don't let friends borrow money'.	I often have a hard time saying 'No'	I express my opinions even if others disagree with me.	When an argument is over I often wish I would have said what was really on my mind.	I tend to just go along with what everyone else wants instead of stating my own thoughts.	I sometimes avoid asking questions for fear of sounding stupid.	I tend to bottle up my emotions rather than talk about my feelings.	If I disagree with my teacher I talk to him or her about it.	I'm usually able to tell people how I'm feeling.	If I don't like the way someone is being treated I speak up about it.	I speak up about things I really care about.	I am careful to avoid hurting other people's feelings even when I feel that I have been wronged.	I have a hard time controlling my emotions when I disagree with someone.	I avoid attacking someone's intelligence when I disagree with their ideas.	I listen to other people's opinions even if I disagree with them.	In disagreements I make sure that I understand other points of view.	In discussions I communicate that I am listening through body language (nodding my head avoiding rolling my eyes).	Even in an argument I don't interrupt the other person.
1	2	3	4	5	6	7	8	9	11	12	13	14	15	16	17	18	19	20

Express Myself (Scaled Score Q1-13)
Respect Others (Scaled Score Q14-20)
Harkness Score (Scaled Score Q4, 6, 7, 16-20)
OVERALL ASSERTIVENESS SCORE (Total Q1-20)