



**University  
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**To what extent does formative assessment affect pupil  
motivation in a S1 social subjects classroom?**

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# **ABSTRACT**

Formative assessment has become a major research interest in the last 25 years, with educators and policy makers taking particular interest in how it can support learning, motivation, and achievement for all (Simpson and Hayward, 1998; Steinmayr et al, 2019; Cizek and Lim, 2023). The link between motivation and formative assessment has been researched before (for example see Cauley and McMillan, 2010; Evans et al, 2014; Heitink et al., 2016; Näsström et al., 2021), but seldom in a Scottish secondary school context. This research enquiry sets out to discover to what extent formative assessment can potentially impact motivation of S1 pupils in a social subjects setting, as well as providing pupils' perspectives on formative assessment in the classroom. The study took place in a Scottish secondary school, with one S1 class as a target group and five other S1 classes as a control group. There were fourteen pupils in the target group and twenty-seven pupils in the control group. This research utilised a pragmatic, mixed-method approach, employing questionnaires to elicit quantitative data, and focus groups and a teacher log to elicit qualitative data. The findings established that formative assessment positively impacted autonomous and controlled motivation. Findings indicated that pupils viewed questioning, feedback, learning goals and self-assessment as promoting motivation and engagement though enhanced understanding and confidence. However, peer-assessment was considered to be both a positive and negative experience, depending on participants' learning contexts.

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## **PERMISSION TO CONSULT**

I give permission for this dissertation to be made available to any individual(s) who may wish to consult or access it.

# ABBREVIATIONS

BERA	British Educational Research Association
BGE	Broad General Education
BtC3	Building the Curriculum 3
BtC5	Building the Curriculum 5
CERI	Centre for Educational Research and Innovation
CfE	Curriculum for Excellence
CLPL	Continued, Lifelong Professional Learning
ERIC	Educational Resources Information Center
GTCS	General Teaching Council for Scotland
NIF	National Improvement Framework
OECD	Organisation for Economic Cooperation and Development
PLS	Plain Language Statement
RQ	Research Question
S1	Secondary 1
SAGT	Scottish Association of Geography Teachers
SERA	Scottish Educational Research Association
SIMD	Scottish Index of Multiple Deprivation

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# CHAPTER 1: INTRODUCTION

## 1.1 Background

Formative assessment as a teaching and learning approach is multi-faceted and complex, with policymakers, researchers and practitioners over the last 25 years becoming increasingly interested in how to best effectively use it. Education Scotland (2021) identifies formative assessment as an essential component of effective learning and teaching, as it can promote equity within assessments and learning, while also supporting teachers' professional development. Best practice of formative assessment in different contexts, subjects, and with different types of learners is contentious and more research is needed to understand this approach and develop tools and techniques to make it more effective.

Scotland's Curriculum for Excellence (CfE) sets out to empower pupils to gain the knowledge, skills, and attributes for lifelong success. To support pupils, teachers must maximise approaches to learning that are engaging and motivating (Scottish Government, 2008). The Hayward review (2023) exemplifies that many Scottish learners and teachers report that a focus on examinations is dominating learning and teaching, leading to demotivated learners. A review of support for learning conducted by the Scottish Government (2020) also indicates that there is a case for a new approach that recognises and understands progress for all learners, that is supportive and responsive, even before pupils reach the senior phase. The Broad General Education (BGE) phase is an important stage for the personal development of pupils and their motivation must be maintained as they develop and broaden their skills so that they can transition (Scottish Government, 2008). Within the BGE, arrangements for assessment must develop and motivate pupils to progress to their fullest across the four CfE capacities (Scottish Government, 2008; Scottish Government, 2011). This should be done by providing pupils with stimulating and challenging opportunities, while provisioning regular review and support through formative assessment to help every child as they progress and develop: one of the main purposes of CfE curriculum is to develop successful learners who are enthused and motivated to learn (Scottish Government, 2008).

This is a focus of the Moray Council's Education National Improvement Framework (NIF) plan, which aims to "continue to strengthen approaches to assessment and moderation in the

BGE.” (2021a; 23). This is implemented in line with practitioners assessing learner progress with a focus on formative assessment methodologies and approaches (Moray Council, 2021b), as it can inform planning and identify improvements in learning (Scottish Government, 2011).

There is also a personal motivation to research this topic. Implementing effective formative assessment requires a deep understanding of assessment strategies and learning processes. Professional development in this area of research may help improve practice within the researcher’s own classroom as well as his peers, which can address equity issues in assessment practices and make learning fairer for all pupils. Overall, the professional development could enhance the level of learning and teaching within the school and across the authority.

## **1.2 Rationale**

The rationale for this research enquiry stems from the need identified in the Scottish Government’s framework for assessment (BtC5), which states: “The arrangements for assessment should enable and motivate all learners to develop to their fullest across the curriculum” (2011; 12). Formative assessment has been increasingly researched in recent years, especially in relation to pupil motivation. Research studies have indicated that formative assessment can increase pupil motivation through timely feedback to provide opportunities for self-reflection and correction, while other studies suggest it enhances pupil autonomy and self-efficacy. However, there are still gaps in the literature, especially when investigating how specific mechanisms operate and interact with each other in particular contexts. This is true for the current context being researched, as there is very little research offering insight into Scottish secondary education, with most research being conducted abroad. Research also tends to focus on pupils who are in the upper-school so further research in this area will help to close this gap in the literature and deepen our understanding of the relationship between formative assessment and motivation in Scottish lower-secondary schools.

By conducting this research in a social subjects class, it will help to encourage teachers who are delivering a wide range of learning topics and content to reflect critically on their practice. The school and local authority may also benefit as feedback can be given through the dissemination of results and the sharing of best practice.

### **1.3 Dissertation Outline**

The dissertation is separated into five chapters:

Chapter One is the introduction to the research enquiry. The background provides context of formative assessment and motivation in Scottish educational policy while the rationale explores why this research project is being conducted. The dissertation outline is also included.

Chapter Two is the literature review. The search strategy employed to conduct the literature review is explored and the prominent and seminal literature that surrounds formative assessment implementation and motivation is critiqued.

Chapter Three is the methodology, outlining and justifying the research paradigm, design, and data collection methods that have been employed in the mixed-method research. Reliability and validity, data analysis, ethical considerations, and limitations of the research are also discussed.

Chapter Four is the findings and discussion of the research, highlighting the key findings of the research and embedding them into wider literature.

Chapter Five is the conclusion, which summarises the key points of the research and evaluates the research. Dissemination strategies and recommendations are also presented.

# CHAPTER 2: LITERATURE REVIEW

## 2.1 Introduction

The design of this literature search is to understand and explore relevant literature surrounding the relationship between formative assessment and motivation within a secondary school setting. Three research questions were created to investigate this:

1. To what extent do formative assessment strategies have an impact on autonomous motivation?
2. To what extent do formative assessment strategies have an impact on controlled motivation?
3. What are the students' perspectives of formative assessment and what strategies best support them?

This chapter will address the current literature surrounding formative assessment, and the impact it has on both self-regulated learning and pupil motivation. The current literature on formative assessment is extensive, so this literature review will explore and highlight relevant research regarding formative assessment strategies, their relationship with self-regulated learning, and the impact it has on pupils' motivation.

## 2.2 Search Strategy

The University of Glasgow's library database, the Educational Resources Information Center (ERIC), and Google Scholar were utilised to obtain relevant and appropriate literature. By utilising a rigorous and effective search approach throughout these multiple sources, relevant literature was identified while concomitantly creating a robust and transparent report.

The initial search for relevant studies of formative assessment was disappointing. This was due to the vast number of results that varied significantly in relevance and context. Boolean searches such as 'formative assessment AND (student OR pupil) motivation' were carried out across the search databases, with additional refining searches implemented to ensure more relevant and current literature would be analysed. Google Scholar was not as straightforward

when refining searches and results were not always available to screen. However, some unrefined searches from Google Scholar have still been included, with great consideration being given to them to make sure that they are still relevant to the research being carried out. While the Boolean search narrowed the search significantly, further filters such as articles published in the last five years, only peer-review articles, secondary educational levels and locations were applied on ERIC and the University library database. The Boolean search of ‘formative assessment AND (student OR pupil) motivation’ alone returned 120,095 results on ERIC, but the inclusion of the filters of ‘Peer reviewed only’, ‘Since 2019’, ‘Secondary Education’, ‘Reports - Research’ and ‘Secondary School Students’ reduced the number of results to 393 (figure 1). Results’ abstracts were then screened to identify potentially relevant literature before full text screening took place. Synonyms were also identified by analysing abstracts and articles and were then also utilised in the search strategy. Terms such as “assessment for learning” and ‘self-regulation’ were added in order to add depth and find results more relevant to the research questions (Punch & Oancea, 2014).

Once search databases had been exhausted, the search strategy of citation chaining was utilised. Citation chaining uses articles to finding other relevant and connected literature (Haddaway et al., 2022). Citation chaining allowed for a richer overview of the theoretical and conceptual work to be included in the literature review and enhance the knowledge base of the topic, while lessening the issues associated with a lack of universal terminology and the ever-expanding amount of research literature by keeping the volume of results within an appropriate range (Cribbin, 2011; Oliver, 2012). Grey literature was also included within the literature review. Although less robust as it not peer-reviewed and can lack methodological quality (Rothstein et al., 2005), the inclusion of grey literature can bring up research that is very relevant and applicable to the current study and can broaden the scope to more relevant studies (Mahood et al., 2014).

Despite search strategies generating a vast number of results, very little research focusing on secondary school education involving formative assessment’s impact on pupil motivation was found in a UK context, with most work focusing on the primary and tertiary education level or in an overseas context. This can be viewed as a limitation of this literature search as there are few works that can be used for academic comparison. However, it also highlights a gap in the literature and will be taken into consideration when reviewing and analysing the literature.

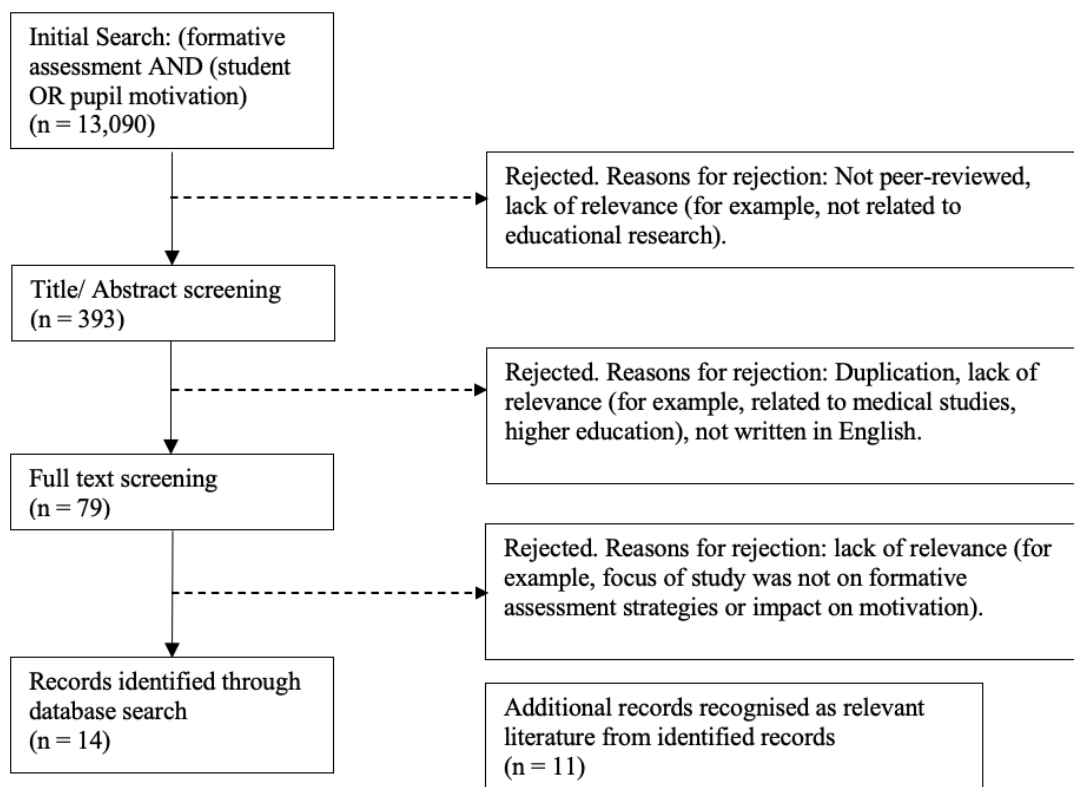


Figure 1: Search strategy for formative assessment and motivation.

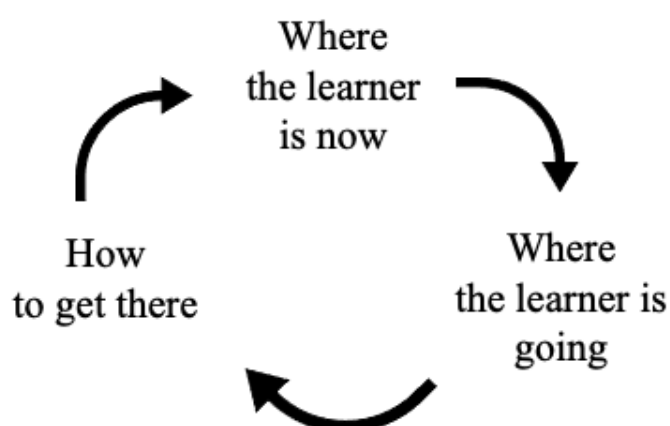
## 2.3 What is Formative Assessment?

Due to the significant and varied literature concerning assessment, there have been many attempts to definitively term ‘formative’ assessment. Black and Wiliam’s (2009) definition of formative assessment has been widely accepted (see Cauley and McMillan, 2010; Xiao and Yang, 2019; Leenknecht et al., 2021; Muho and Taraj, 2022) and is built upon their earlier and seminal work in this area of research. Black and Wiliam define formative assessment as:

“Practice in a classroom is formative to the extent that evidence about student achievement is elicited, interpreted, and used by teachers, learners, or their peers, to make decisions about the next steps in instruction that are likely to be better, or better founded, than the decisions they would have taken in the absence of the evidence that was elicited.” (2009: 9)

In contrast to summative assessment, which only evidences pupils’ present attainment, it should also be made clear the importance of not understating formative assessment as simply

collecting data from pupils to improve learning, but rather as the planning and implementation of each formative assessment strategy before and during learning and then the deliberateness of feedback when it is provided to the pupils to highlight gaps and adapt learning (Cauley and McMillan, 2010; Good, 2011; Evans et al, 2014; Muho and Taraj, 2022). Formative assessment can be viewed as a paradigm in which teachers, pupils, and their peers are all active participants in using assessment as a tool to create and learn from high and low-stakes tasks, creating a feedback loop that facilitates and constructs awareness of where the pupil's current level of learning is, where their learning needs to go, and how to close that gap (figure 2). This will allow all participants to acknowledge their current level of understanding and progress and adapt learning and teaching accordingly (Black and Wiliam, 2009; CERI, 2008; Xiao and Yang, 2019).

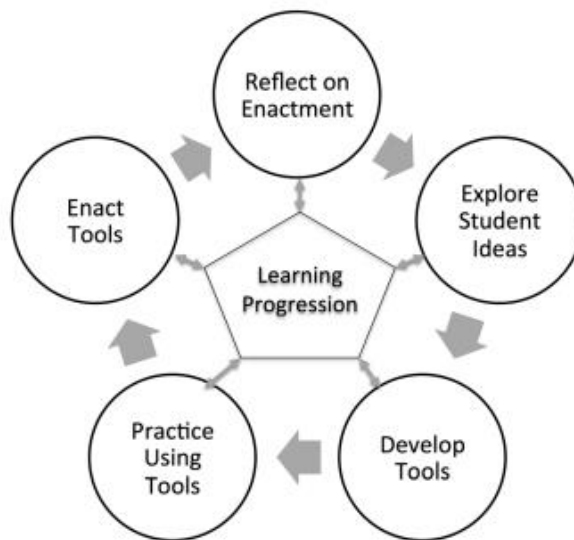


*Figure 2: Formative assessment as a feedback cycle.*

However, implementing formative assessment can raise varying challenges as teachers' own abilities, decision-making and workload play pivotal roles in effectiveness. The strain between individual teacher deliverance of formative assessment and the accountability of highly conspicuous summative assessments that drive national, local authority and school policies shows disparity and lacks connectedness, often leading to ineffective outcomes (CERI, 2008). The Hayward review (2023) builds upon this by critiquing the current assessment format by asserting that there is disparity between what is currently employed compared to what CfE had originally intended with current assessment not sufficiently meeting the needs of every pupil set out in BtC3.

Formative assessment is driven by three key components: evidencing students' knowledge and understanding to highlight gaps in their learning, familiarising pupils with expectations and targets, and providing students with feedback that facilitates the regulation of learning (Cauley and McMillan, 2010; Evans et al., 2014). This again contrasts with summative assessment as formative assessment should become a sustained process of instruction and feedback, implemented through informal observations, questions and dialogue (Xiao and Yang, 2019). Cyclical models have been created to encompass this process. Ruiz-Primo and Furtak (2007) introduced the ESRU model to encapsulate the interaction between teachers and pupils as a sequence: "the teacher elicits a response (for instance with a specific inquiry or task), the student responds, and the teacher recognises and uses the student's response in further instructions." (2007: 61). Additionally, Furtak and Heredia (2014) identified the Formative Assessment Design Cycle (figure 3). This cycle involves five steps for teachers to carry out: (1) explore student ideas, (2) develop tools for pupils, (3) practice using tools to understand the type of responses received, (4) enact the tools with the pupils, and (5) reflect on tools. The idea behind this cycle is that the intertemporal elicitation and feedback of information to and from pupil and teacher adapts to varying learning needs while generating information that can support pupils in the short, medium, and long-term (Furtak et al., 2018).

The issue with the assertions supported by Cauley and McMillan (2010) and Evans et al. (2014), as well as with the formative assessment cyclical models, is that none posit responsibility on pupils and their need to be active participants. Pupils should be involved in target setting, highlighting gaps in their knowledge, as well as providing feedback and instruction to themselves and peers. Black and Wiliam (2018) and well as Leenknecht et al. (2021) agree that these ideas are teacher-centric and negate two of the three main negotiators in the formative assessment relationship: pupils and their peers. Considering this, Stiggins (2005) offers the term "Assessment for Learning" as he outlines the need to move away from previous and more traditional ideas of what formative assessment should be. By highlighting that pupils should be active decision makers that too should inform their own learning, it provides a fresh perspective on assessment decision making and school improvement (Stiggins, 2005; Heitink et al., 2016; Brandmo et al., 2020). By adopting an inquiry-perspective approach, pupils not only learn the subject content but also how to learn, thus recognising the autonomy of students and their ability to work independently and with peers, which are more in line with current conceptions of formative assessment (Heitink et al., 2016; Leenknecht et al., 2021).



*Figure 3: The formative assessment design cycle (Furtak and Heredia, 2014).*

Furthermore, Black and Wiliam (2009) offer five strategies of formative assessment that are inclusive of all three negotiators and also comprehensively cover the three components of formative assessment laid out by Cauley and McMillan (2010). They are:

- Sharing and clarifying learning intentions and success criteria
- Implementing questioning that elicits evidence of learning
- Providing feedback that progresses pupils' learning
- Using self-assessment to establish learners as their own learning resource
- Using peer-assessment to establish learners as resources for each other

By using these formative assessment strategies, collaboration between all three negotiators can form the learning process. Although teachers will still tend to take the lead role in the learning process, their main purpose is to instruct pupils on how to reduce the difference between their current level of learning and where the teacher ideally wants their learning to be (Black and Wiliam, 2009; Wafubwa, 2020) while also promoting student autonomy (Heitink et al., 2016).

## **2.4 Self-regulated Learning and Pupil Motivation**

To fully understand the impact formative assessment can have on motivation, self-regulated learning must first be understood. Self-regulation refers to the ability of learners to identify learning goals, be aware of their strengths and weaknesses, select appropriate strategies to learn, and generate environments that allow them to control their understanding, motivation

and behaviour to reach the learning goals (Xiao and Yang, 2019; Vattøy and Smith, 2019; Muijs and Bokhove, 2020; McMillan and Moore, 2020). Self-regulated learning can have an impact on pupil motivation as motivation is generated through pupils' behavioural engagement, competency, and agency (Näsström et al., 2021; Muho and Taraj, 2022).

Ryan and Deci (2000) categorise pupil motivation into either autonomous motivation or controlled motivation. Autonomous (or intrinsic) motivation is when pupils engage in learning for a number of reasons: they are engaged in learning as they find it interesting or enjoyable, they feel competent and capable of the work, and they value what they are learning (Glennie et al., 2017; Näsström et al., 2021). Controlled (or extrinsic) motivation is when pupils are engaged in learning activities that they feel forced into. This could be due to extrinsic rewards such as better grades, as well as to avoid feelings of shame and guilt, created from pressures from friends and family, as well as to avoid punishment (Näsström et al., 2021).

By creating a learning environment where all three negotiators are involved, pupils tend to show more autonomous motivation as they are active participants. Research from a five-year study conducted by Brookhart et al. (2009) highlights that formative assessment is specifically linked to self-regulation and self-efficacy and by allowing pupils ownership of their learning, pupils were more engaged in their learning, and this led to higher pupil achievement. This is supported by Heitink et al. (2016) as their systematic review evidenced that eight studies found a positive correlation between active participation, pupil autonomy and engagement. Perry et al. (2020) also found that there is evidence to support the relationship between autonomous motivation and self-regulated learning, although their research focused on supporting teachers to create and deliver assessments rather than a triangulated approach between the negotiators.

However, several studies have shown that pupil motivation frequently diminishes and becomes less autonomous as pupils progress through their school life (Bølling et al., 2018; Scherrer and Preckel, 2019; Winberg et al., 2019; Vu et al., 2022). This can be due to teachers focusing on ability, as well as there being an emphasis on grades rather than learning when completing work or assessments. Cauley and McMillan (2010) and Muho and Taraj (2022) indicate that if teachers give feedback with an emphasis on ability and grades, it can affect the self-esteem of lower-achieving pupils as they become demotivated and resign themselves to believing they are not capable.

## **2.5 Efficacy of Implementing Formative Assessment Strategies**

Having distinguished what formative assessment is and the key strategies of it, what now must be assessed is how each formative assessment strategy is best implemented to support motivation. The five formative assessment strategies can be categorised into two types of formative assessment: teacher-led and pupil-centred. However, it is imperative to not consider these categories separately; the malleable nature of formative assessment strategies allows for the control of these tasks to change between the three negotiators when appropriate. By intertwining a range of formative assessment strategies into each learning and teaching phase, a reciprocal continuum of planning, elicitation and feedback of information can be co-created to meet a large variety of needs while still considering and maintaining the position and role of each facilitator (Good, 2011; Shepard, 2017; Xiao and Yang, 2019).

Although still linked, both types of formative assessment are constructed differently. Target setting, questioning and feedback are considered to be more teacher-led formative assessment strategies, while self-assessment and peer-assessment tend to be student-centred (Näsström et al., 2021).

### **2.5.1 Teacher-led Formative Assessment Strategies**

Regarding teacher-led formative assessment first, setting learning goals - such as learning intentions and success criteria - usually involves teachers creating and making clear the expectations and criteria of the varying levels of learning in a pupil-appropriate language (Xiao and Yang, 2019; Johnson et al., 2019). Providing learning intentions and success criteria to pupils allows pupils to understand more clearly what is expected of them and when coupled with strong and weak model answers, it enables pupils to set their own learning goals and become more self-regulated in their learning (Stiggins, 2008; Johnson et al., 2019; Brecht and Fang, 2022).

Although van Schaik et al. (2019) have found that there are benefits to co-constructing learning goals with pupils, Meusen-Beekman et al. (2015) identify that younger pupils are more dependent on external feedback before they can self-regulate and create learning goals independently. Additionally, as pupils can be at different learning levels, it may be potentially

difficult for them to negotiate learning goals that can provide the variety needed for all pupils (McWayne et al., 2020).

The strategic use of questioning can also work as a catalyst for generating constructive classroom discussion. By utilising effective questioning, evidence of pupil learning can be obtained while also promoting and consolidating understanding, uncovering any misconceptions pupils may have, and providing pupils with opportunities to think critically (Heitink et al., 2016; Johnson et al., 2019; Leenknecht et al., 2021). To undertake effective questioning, teachers must guarantee that the quality of questioning is to a standard that offers pupils an opportunity to evolve their thinking. Johnson et al. (2019) assert that teachers must also provide effective wait time for pupils to construct their answers, and then be able to recognise, interpret, and act upon the diverse answers pupils give. Ruiz-Primo and Furtak (2007) build upon this and specify that questions should also be made specific enough so that pupils understand the type of response expected of them but still offer scope for pupils to expand on their answers. Additional probing questions should also be utilised to clarify any vague answers given by pupils or to elevate the overall level of discussion. However, teachers' subject-specific content knowledge can limit the efficacy of additional probing questions, as teachers must fully understand a concept to elicit further information when questioning to pupils, something which non-subject specialists may struggle with.

For questioning to also be effective and promote pupil motivation, a classroom climate that is supportive must be created, so pupils feel comfortable enough to answer in front of the teacher and their peers (Heitink et al., 2016; Johnson et al., 2019). By doing so, pupils are provided with freedom and safety when answering and are more accepting of making mistakes and taking risks. Neurologic studies have shown that when mistakes are part of the learning process, pupils are more engaged and motivated within the class as they see mistakes as opportunities to learn and create a collaborative network within the classroom (CERI, 2008; McMillan and Moore, 2020). However, accountability pressures can force teachers to not engage with deeply ingrained ideas of questioning within their own specific teaching and delivery as time-constraints and policy issues restrict interaction and freedom (Heitink et al., 2016).

The final, and arguably the most important, teacher-centred formative assessment strategy is feedback. When feedback is immediate, specific to the individual, and targeted to the learning goals, it can allow pupils to be reflective and allow them to work out how to progress (Pat-el

et al, 2012; Andersson and Palm, 2017; Johnson et al., 2019; Furtak et al., 2018; McCallum and Milner, 2021). The temporal nature of feedback highlights the need for immediate feedback so pupils can act upon it but also for teachers to use the feedback to construct learning over the next period, week, and unit (Pat-el et al, 2012; Furtak et al., 2018). Heitink et al. (2016) make clear that feedback should not just be given *after* a piece of work or task is completed but should be used continually throughout the learning process of the task or piece of work. Additionally, teachers can also use immediate and specific feedback to understand if instruction needs to be adapted in order to meet the learning requirements of each pupil (Andersson and Palm, 2018; Wafubwa, 2020). However, teachers' pedagogical and subject-specific content knowledge can impede the efficacy of feedback, as Heitink et al. (2016) highlight multiple studies which have evidenced the need for teachers to fully understand a concept and the misconceptions surrounding the topic in order to be able to provide meaningful and precise feedback to pupils. Bennett (2011) terms this as the "domain-dependency issue" (2011: 15), where formative assessment strategies are not effectively implemented within specific subjects. Most studies actually are found to have little to no effect on attainment (Hendriks et al, 2014; cited in Heitink et al., 2016).

Furthermore, Kluger and DeNisi's (1996) influential meta-analysis confirms that feedback is not regularly effective and can even inhibit learning progression as they found a large variation in results across 131 studies. When the feedback focused on the pupils' ability rather or gave non-specific praise, they found that one third of studies led to negative pupil performance while another third had no effect on the outcome of the learning with or without feedback. Only in the one third of studies that feedback focused on how to deal and progress within the task, especially in relation to learning goals, did feedback actually enhance performance (Darling-Hammond et al, 2020; Shepard, 2017). When feedback also focuses on pupils' ability, it can increase controlled motivation as pupils may become competitive and focus on performance goals. This may lead to an escalation of perceived pressure when completing future tasks, as pupils base success on the outcome of a task rather than the learning occurring, leading to cursory, surface learning (Cauley and McMillan, 2010; Leenknecht et al., 2021).

It must also be understood that there is a difference between teachers' and pupils' perceptions of feedback. There is now a growing body of work focussing on pupil perceptions of feedback with studies conducted by Jónsson et al. (2018) and Van der Kleij (2019) (both cited in Wafubwa, 2020) suggest that teachers tend to have a higher perception of the efficacy of

feedback in comparison to pupils. This indicates that it is not enough for teachers to simply believe that the feedback they give is effective, but pupils' perceptions of feedback must also be considered. This is due to what McCallum and Milner (2021) term as pupils' "feedback literacy" (2021; 2), which considers how pupils gauge their own understanding and capacities to use the feedback given to them to then progress their learning, as pupils can misinterpret some, if not all, feedback (Brookhart, 2013; Leighton, 2019). Furthermore, it is vital to acknowledge pupils' interpretations of feedback as these are usually critical pieces of evidence missed by many practitioners and researchers (Leighton, 2019). By doing so, thoughtful and deliberate help can be given to pupils for them to engage with feedback, enhancing each pupil's ability to access and enhance their feedback literacy, and enhance their self-regulation (Poulos and Mahony, 2008). This also furthers the importance of dialogue and active participation between all three negotiators to make formative assessment as effective for each pupil as possible, allowing for the elicitation of knowledge on why some formative assessment strategies work and other do not, especially in the context of creating bespoke content and teaching to a diverse range of learners (Leighton, 2019).

Feedback also ties in greatly with learning goals as the feedback is usually linked to the specific learning goals of the topic or assessment. Research conducted by Vattøy and Smith (2019) found that pupils need to know how the feedback relates to the learning goals in order to perceive the teacher feedback to be useful, and allow them to independently reach their learning goals. Nicol (2021) stipulates that all feedback is internally generated as it always involves a comparison between their current understanding and a reference point. Pupils generate internal feedback not just from teacher comments but also from learning goals, their own previous work and the work of others around them. By creating feedback that relays information about the pupil's current work, the learning goals and then finally how to progress, it can positively impact pupils' self-regulation and motivation (Adams et al., 2020; Leenknecht et al., 2021). This also allows pupils to reflect and review their own learning and the generation of dialogue between the teacher and pupil that is forward-thinking and progressive, which in turn creates increased student autonomy and competence, rather than giving feedback that instils negative expectations and hesitant competence (Heitink et al., 2016; Leighton, 2019; Leenknecht et al., 2021).

### **2.5.2 Pupil-centred Formative Assessment Strategies**

The two student-centred formative assessment strategies put forward by Black and Wiliam (2009) are self-assessment and peer-assessment. These strategies assist teachers in giving responsibility to pupils and their peers for assessment marking and feedback, immersing pupils in their own learning process (Heitink et al., 2016). Learning goals once again are very much connected to these formative assessment strategies as they create the basis for the criteria given to pupils to understand, generate, and in the case of peer-assessment, redistribute high quality feedback (Moss and Brookhart, 2019; Xiao and Yang, 2019; Allal, 2020).

Self-assessment, specifically, is the process of when pupils apply the success criteria to their work and then compare their answers to that criteria. This will allow pupils to identify the strengths and gaps in their learning and then decide how to create the next steps in their learning journey to reach the goals set out, giving them autonomy in their learning (Moss and Brookhart, 2019). This can promote self-regulation as Birembaum et al. (2011) found that pupils view their involvement as important and become more engaged as a result. Peer-assessment is similar in essence, as it still applies the success criteria to the work of a peer, comparing the differences between success criteria and answers given, and then giving feedback to the peer to use for progression (Moss and Brookhart, 2019; Näsström et al, 2021).

The concept of pupils as active participants is crucial as Black and Wiliam (2018) have already made clear. Numerous research papers (for example, Brookhart, 2013; Moss and Brookhart, 2019; Romollo and Kanjee, 2023) highlight the need for pupils to be the most prominent users of assessment information, and student-led formative assessment allows for pupils to be active participants in their learning. Moss and Brookhart (2019) go further in suggesting that the criteria used in self- and peer-assessment should come from the pupils themselves, although not by necessarily creating entirely new criteria but rather generating criteria from what they already know about the learning goals. This will ensure that involvement is embedded from the offset, however consideration should still be given to the limitations of co-constructing learning goals set out by Meusen-Beekman et al. (2015) and McWayne et al. (2020) in Chapter 2.5.1.

One requirement of self- and peer-assessment is that pupils have to know how to use the assessment criteria before they can successfully implement it (Brookhart, 2013; Shepard,

2017). By teaching and helping pupils learn how to learn, they develop meta-cognitive understanding and reflection of the processes involved, which will ultimately improve feedback literacy and how to approach other tasks (Heitink et al., 2016; Ramollo and Kanjee, 2023). The development of meta-cognition can enhance self-efficacy and self-regulation as pupils gain more understanding of the myriad of ways to approaching a task, giving pupils more scope through a varied toolkit. This can lead to the development of self-regulation and motivation and pupils can generate self-perceptions of improved competence based on the internalised feedback they generate (Heitink et al., 2016; Näsström et al., 2021).

Another consideration that should be given to self- and peer-assessment is the classroom climate that it is conducted in. Both formative assessment strategies should be implemented in a safe and supportive classroom environment where mistakes are welcome and feedback is seen to offer learning opportunities (Meusen-Beekman et al., 2015). Research conducted by Djigic and Stojiljkovic (2011) found that when teachers implement an interactionist style, which is a style that prioritises cohesion, goal-orientation and views pupils as active and valuable participants in the learning process, pupils are happier and more content in class. However, the classroom climate may also create additional factors that have to be addressed when implementing peer-assessment. Pupils believing that the feedback they receive from their peers is of value, pupils' behaviours to each other when conducting peer assessment, and pupils' willingness to engage with the activity can all play an important role in the efficacy of peer-assessment to promote self-regulation (Moss and Brookhart, 2019). If not conducted properly, peer-assessment can have a negative on motivation and learning.

## **2.6 Summary**

This chapter has examined the discourse around formative assessment and the best practice of its implementation, with particular consideration given to the relationship between formative assessment, self-regulation and motivation. It has found that when implemented successfully, formative assessment can have a myriad of positive impacts on pupils' self-regulation and ultimately motivation. This research aims to add to the body of literature surrounding the impact of formative assessment on motivation by determining the impact of formative assessment on both autonomous and controlled motivation in a Scottish S1 social subjects class, in order to validate the claims of previous research and offer a new perspective by offering insight from pupils themselves. The following chapter will outline the methodological design and approach to carry out this enquiry.

# CHAPTER 3: RESEARCH METHODOLOGY

## 3.1 Introduction

This chapter will outline the design of the research and justify the choice of methodology and data collection methods. Cohen et al. (2018) make clear the importance of using research to inform methodological practice, as by recognising how research is linked to understanding and what we interpret understanding to be, the correct paradigms and lens can be chosen to construct the most effective methodology.

Considering this, the methodology will justify the research paradigm and design, evaluate the reliability and validity of the design and then discuss the data analysis. Ethical considerations, limitations, and dissemination of the research project will also be discussed.

## 3.2 Ontology and Epistemology

The importance of ontology and epistemology within research is paramount as it enables understanding into the researcher's worldview of how they consider knowledge to be constructed, and how the researcher attempts to best generate an understanding of the research data, and ultimately research question (Rhodes and Brundrett, 2013; Punch and Oancea, 2014; Kivunja and Kiyini, 2017). Considering the aims of this research, a pragmatic paradigm has been assumed and a mixed method approach has been adopted to design the methodology and data collection methods. A pragmatic paradigm has been chosen as it allows for the research to be approached quantitatively and qualitatively, as the mixture of quantitative and qualitative data collection methods endorses a “non-singular ontology” (Kivunji and Kiyini, 2017: 35), which signifies that the data elicited from participants is constructed from varying cognitive standpoints.

A mixed method approach has also been chosen as research has evidenced “methodologically unsound” (Kingston and Nash, 2011: 29) analysis’ that only employ singular quantitative or qualitative approaches, which do not fully capture the research questions or fail to fully investigate the intricacy of behavioural research in an educational setting (Creswell and Creswell, 2017; Wafubwa, 2020). Using a mixed-method approach was deemed most

appropriate for this research study as the strengths of positivist and interpretivist approaches can be combined while additionally offsetting the weaknesses of the other, as using both types of data concurrently permits for triangulation. This can generate a rich and more in depth understanding of the questions at hand (Creswell and Creswell, 2017; Tümen Akyıldız and Ahmed, 2021; Taherdoost, 2022).

### **3.3 Research Design**

To answer the research questions, multiple data collection methods were used to collect and triangulate the data, with questionnaire data, focus groups, and a teacher log being utilised to gain a more complete view of the research aim.

#### **3.3.1 Selection of research participants**

Overall, 41 participants were part of this study, with 14 pupils in the target group and 27 pupils in the control group. Pupils were between the age of 12 and 13 and came from a range of cultural and socioeconomic backgrounds, with pupils living in SIMD 1 to SIMD 10. There were 9 boys and 5 girls in the target group and 13 boys and 14 girls in the control group taking part in the study.

Participants in the target group were students in the researcher's S1 social subjects class and the participants in the control group were from five classes that are part of the same S1 social subjects cohort within the researcher's school. All S1 classes were learning the same topic – the geography topic of weather – at the same time, allowing for a more reliable comparison to be made between the target and control group. Pupil selection was conducted on a voluntary basis. Due to the participants' age, parent/carers consent had to be obtained. Permission was sought by giving pupils a PLS and consent form that had to be signed by both pupil and parent/carers and could be returned either online or by paper copy (see Appendices). Permission was also obtained at institutional level. The environment and operations of the school were known to the researcher, meaning that there were no constraints to the research being carried out.

### 3.3.2 Research Procedure and Timeline

As the researcher wanted to convincingly identify cause-and-effect relationships, an experimental design that considers the many different causes and influences that could impact the research conditions must be implemented (Kirk, 2009). Taking that into account, the enquiry was conducted using quasi-experimental research, with a nonrandomised control group pre-test – post-test design. Internal validity was accounted for by using pupils who are the same age and being taught the same course material simultaneously.

Group	Time →		
Target Group	O <sub>1</sub>	T <sub>x</sub>	O <sub>2</sub>
Control Group	O <sub>3</sub>	-	O <sub>4</sub>

*Table 1: Nonrandomised control group pre-test - post-test design.*

O<sub>1</sub> represents the target group pre-intervention observations while O<sub>3</sub> represents the control group pre-intervention observations. T<sub>x</sub> represents the intervention, in this instance the formative assessment strategies, while O<sub>2</sub> represents the target group observations and O<sub>4</sub> represents the control group observations after the five-week intervention. By using this enquiry design, it should suitably investigate if formative assessment does affect pupil motivation in a S1 social subjects classroom.

By carrying out this quasi-experimental design, it offers validity in assumptions made that any difference in autonomous or controlled motivation results between the control group and target group can be linked or attributed to the formative assessment strategies implemented, as the intervention (T<sub>x</sub>) has a direct influence on the target group observations (O<sub>2</sub>), but not on the control group observations (O<sub>4</sub>).

The timeline for this enquiry consisted of twelve periods, over five weeks during April and May. Pupils were seen three times a week, but due to local authority in-service days and national holidays, pupils were not in for every period. The time period allowed for the majority of a unit and a unit assessment to be covered. Consent was sought at the start of April, before the start of the enquiry timeline, so that pupils and parents had ample time to ask any further questions and respond accordingly.

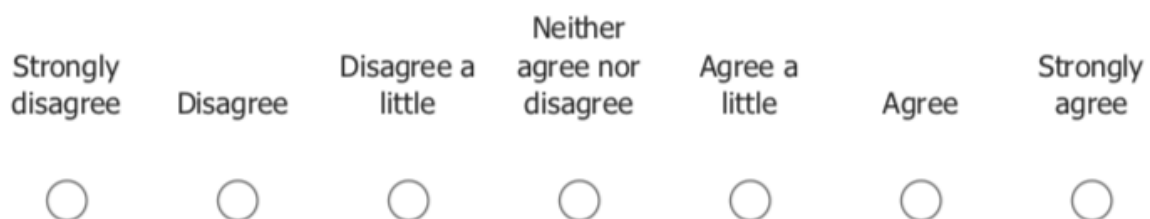
The intervention was carried out in the target group class, with many of the formative assessment strategies being planned for before the delivery of the lesson. Learning goals were implemented in lessons to specify the criteria for different tasks and learning. Questioning and feedback occurred frequently, either in the form of impromptu, immediate feedback or questioning during a task, or in the form of more detailed and planned questioning and feedback. Self-assessment and peer-assessment occurred less frequently due to the nature of some of the tasks as well as time constraints set upon the lessons because of single period delivery. Overall, formative assessment strategies were implemented 47 times across the twelve lessons (Table 2):

<b>Formative Assessment Strategies</b>	<b>Number of times implemented</b>
Learning Goals	13
Questioning	14
Feedback	14
Self-Assessment	3
Peer-Assessment	3

*Table 2: Formative Assessment strategies implementation*

### 3.3.3 Questionnaire Design and Implementation

The questionnaire was designed to measure the changes in students' behavioural engagement, autonomous motivation, and controlled motivation. The questionnaire was administered to the target group and control group before and after the intervention. Pupils measured their opinions of each statement on a 7-point Likert scale, ranging from Strongly disagree (1) to Strongly agree (7), with Neither agree nor disagree (4) being the middle ground (see figure 4).



*Figure 4: Likert scale used in the questionnaires.*

There were five questionnaire items regarding behavioural engagement, and six items each concerning autonomous motivation and controlled motivation, which were adapted from Näsström et al.'s (2021) questionnaire on student motivation. Questionnaire statements were

modified in order to best allow pupils to be able to understand each statement (Cohen et al., 2018). All questionnaire items can be found in Appendix E. An example of each question item type is as follows, starting with behavioural engagement: “I always try to learn as much as possible in this class.” Examples of autonomous and controlled motivation question items are: “When I am completing tasks during a lesson, I do it because it is fun” and “When I try to learn the content of social subjects’ lessons, I do it because I will feel bad if I don’t perform well.”

Questionnaires were chosen for this study over other data collection methods because as Menter et al. (2011) indicate, the simple design and use of questionnaires can effectively collect large amounts of information in a short timeframe. This was essential when collecting data from six different classes during a busy school day. Additionally, by making the questionnaires available to complete online and technology-based, it suits the younger demographic who are tech-literate and it makes it easier for them to complete (Menter et al., 2011). The closed questions allow for rapid analysis and the processing of information is much quicker as the data is available online in different formats as soon as it is submitted by participants. By implementing a Likert scale in the questionnaire, it allows for easy analysis of the answers as well as allowing for easier understanding of the questions (Anderson and Arsenault, 1998).

However, drawbacks to questionnaires include pupils’ abilities to answer the questionnaire. Pupils’ honesty, motivation, and memory, as well as understanding of the questionnaire items, may affect the results: bias and positionality must be accounted for (Menter et al., 2011). The questionnaires were conducted during class time and each time they were administered, a teacher was made available to introduce the statements, answer any questions, and reiterate that the responses were anonymous, so that any misunderstandings could be rectified immediately and so that pupils felt that they can answer truthfully (Menter et al., 2011).

### **3.3.4 Focus Group Design and Implementation**

Focus groups are designed to elicit insights and reveal participants’ perspectives on topics to produce qualitative data that can be analysed to better understand the topic (Wilson, 1997), and also “[give] voice to the data” (Linneberg and Korsgaard, 2019: 264) of the quantitative data collection methods. Krueger (2014: 2) additionally defines a focus group to be “a special type of group in terms of purpose, size, composition and procedures” which utilises specifically

designed conversations and discussions with the group to gain the topic insight. Focus groups tend to be conducted with a small group of between four to twelve people, carried out in a non-threatening environment, and promotes group interaction and discussion (Wilson, 1997: 211).

For this research study, focus groups were chosen rather than using more structured interviews as a direct result of Wilson's (ibid.) latter two points. As the pupils are young, focus groups allow for a more comfortable setting as Heitink et al. (2016) and Adler et al. (2019) specify that children may feel safer and more open to voicing their opinions if they are with familiar group members. Focus groups were also chosen in preference to interviews as, through the group interaction and discussion, an extensive amount of data can be generated through a shared knowledge of understanding and perspective that may not have developed in an individual interview (Wilson, 1997; Smithson, 2000). Focus groups were also chosen after consideration was given to the power relations that are produced when teachers are conducting research with their own pupils. Focus groups can limit the power imbalances, as researchers have a reduced influence over a group of participants relative to one-on-one settings (Belzile and Oberg, 2012; Adler et al., 2019).

Two focus groups were conducted after the intervention had concluded, with four pupils in each group. Each focus group was made up of pupils of mixed gender and ability who were chosen from the target using non-probability sampling. Focus groups were conducted in the classroom where pupils had their social subjects lessons as the familiar location would ensure that pupils would be comfortable and relaxed when answering questions (Adler et al., 2019). The focus groups lasted no longer than fifty minutes and were conducted during school time.

The focus group questions initially stemmed from the questionnaire items as well as questionnaire items adapted from Muho and Taraj's (2022) research on formative assessment, with additional questions that were relevant to the discussion also being asked. Participant responses were recorded on the researcher's mobile phone, so that the researcher was free to spend more time listening and delving into more pertinent areas of enquiry with the pupils (Sim, 1998). Recordings were then transcribed verbatim so that no meaning or context is lost when analysing the data (Gill et al., 2008).

### **3.3.5 Teacher Log Design and Implementation**

Teacher logs are considered a type of participant observation, with participant observation referring to “naturalistic, qualitative research in which the [researcher] obtains information through relatively intense interaction with those being studied and first-hand involvement in the relevant activities of their lives” (Levine et al., 1980: 38). Teacher logs were chosen as a data collection method because they can offer additional data on a teacher’s formative assessment practice. A teacher log can show the difference in formative assessment strategy effectiveness over time and illuminate common practices amongst formative assessment strategies (Näsström et al., 2021). Furthermore, a teacher log is easy to implement and utilise as a data collection method in this research as the researcher is already teaching the class and costs nothing but time for the researcher to carry out. Teacher logs also add an additional perspective and offer insight into behaviours and body language as it happens that may be missed within the questionnaires and interviews (Cohen et al., 2018). This is especially pertinent when considering formative assessment strategy implementation through the teacher/researcher’s eyes, as it can often be nuanced and not considered by the pupils themselves.

The teacher log design was derived and adapted from work done by Glennie et al. (2017), Rowan and Correnti (2009), and Näsström et al. (2021). The teacher log was separated into three sections: lesson description, lesson instruction, and lesson implementation. The lesson description outlined the contents, topics and pupil activities of each lesson, while the lesson instruction outlined the materials of the lesson as well as further explained the pupil activities and formative assessment strategies employed throughout each lesson. The lesson implementation reflected on the lesson success and progression, as well as reflecting on the rationale to choose each formative assessment strategy and activity and if any changes had to be made for the next lesson. A teacher log was always completed after each lesson, usually shortly after the period ended.

### **3.4 Reliability and Validity**

By using a pragmatic mixed-method approach to data collection, triangulation between the methods will increase the internal validity and credibility of the data and merge the data from independent measures to answer the same research aim (Cohen et al., 2018). Methodological

triangulation also reduces possible bias and distortion of the researcher's understanding and analysis of the research data (Creswell and Creswell, 2017).

To check the validity of the questionnaire items, Cronbach's alpha was calculated for each set of questionnaire items to assess their internal consistency. Considering the data of each pre-intervention/ post-intervention item set, Cronbach's alpha for behavioural engagement was 0.9/0.81, for autonomous motivation was 0.9/0.93 and for controlled motivation was 0.8/0.78. As these scores are all above 0.7, this indicate acceptable to excellent internal consistency, which will ensure validity when eliciting information from participants (Tavakol and Dennick, 2011).

However, as pupils were not able to be randomised within classes and the research utilises a quasi-experimental research design, the validity of the data may be limited due to confounding variables that influence the research (Maciejewski, 2020). To control confounding variables and maximise internal validity, factors within and between control and target groups were kept the same, such as age and contents of work. The use of a control group also potentially limited confounding variables and increase internal validity, however, pupils in the control group may have been influenced by *the Hawthorne effect*, which manifests as increased scores in the control group as a result of pupils knowing they are taking part in a study (Denscombe, 2017).

Qualitative research trustworthiness criteria were applied to the data collection methods of the focus groups and teacher log. Lincoln and Guba (1985) lay out that there is a distinct difference between positivistic (quantitative) and naturalistic (qualitative) reliability and validity criteria and should be treated accordingly. When carrying out these two data collection methods, rigorous routines were established to gather accurate and detailed data. As the researcher was the classroom teacher, the researcher was able to spend prolonged periods of time in the research site and was consequently able to observe the target group regularly, thereby increasing credibility (Anney, 2014). Methodological triangulation also increased credibility by reducing bias, as well as improves dependability. The researcher has kept and stored all electronic and non-electronic materials that have been used throughout the research enquiry so that confirmability can be maximised, and the results of the research can be corroborated (Anney, 2014).

### **3.5 Data Analysis**

Quantitative data was subject to descriptive and inferential statistical analysis. Mean pre- and post- intervention scores were generated for both the target and control group to make them comparable. The standard deviation of pre- and post- intervention scores for both groups were then determined to find out the variation within results, indicating how generalisable sample results are to the wider population. A Shapiro-Wilk test was utilised to test if the data set was normally distributed. The p-value was 0.12, indicating normal distribution as  $p > 0.05$ . As a result, Welch's two sample t-test was used to assess for statistical significance and Cohen's *d* to find effect size.

Welch's two-sample t-test was chosen to analyse the two data groups because although this test assumes that both groups' data sets follow a normal distribution, it doesn't assume that the two groups have the same variance. This is important as the target group and control group have different sample sizes and ultimately two different standard deviations. Welch's two sample t-test was used to see if the scores are statistically significant to each other, using a P-value of 0.05, evidencing that  $p < 0.05$  is statistically significant. Both descriptive and inferential statistical results are presented in table and chart formats so the information can be interpreted and understood easily without overloading the reader (Denscombe, 2017).

An inductive grounded theory approach was implemented to analysis the qualitative data concerning pupils' perspectives on formative assessment strategies and which formative assessment strategies best supported them. Codes were identified from the focus group transcripts and teacher logbook which were then grouped into concept and themes. Inductive analysis was chosen as it can allow relevant themes and categories to materialise from the responses (Braun and Clarke, 2006; Riel et al., 2016). By doing so, the ideas and insight generated would be more likely to offer more understanding and be comparable to pre-existing theories on how to best move forward pragmatically (Denscombe, 2017).

### **3.6 Ethical Considerations**

Several ethical considerations were taken into account when conducting this research. Ethical approval was obtained through the University of Glasgow ethics committee and then obtained at school level. No ethical clearance was required at a Local Authority level as the head teacher

of the school held jurisdiction. To minimise any possible distress for pupils, it was made clear to parents/carers and pupils on the consent forms that they could withdraw at any point of the research and without explanation (SERA, 2005; BERA, 2018). A plain language statement was also issued out to pupils and parents/carers, providing a full outline of the purpose of the research and what to expect if they did take part, allowing for informed consent to take place (Green et al., 2003).

Ethical consideration was also given the dual role of the researcher as teacher *and* researcher. The dual role of the teacher and the relationship they have with pupils can lead to potentially problematic issues such as social desirability bias as pupils may provide responses that they consider to be socially acceptable rather than what they truly believe, producing contentious results (Grimm, 2010; Adler et al., 2019; Bergen and Labonté, 2020). To minimise this issue, pupils were reassured that their responses would be anonymised and that the professional relationship between the researcher and them would not be affected, regardless of the answers they gave. Bias was further minimised by triangulating the data collection methods, so that the method of participant observation could recognise and measure information that methods such as focus groups and questionnaires were unable to conceptualise (Harvey, 2018).

For the focus groups, social-desirability bias was again minimised by asking pupils to provide stories or examples of their own experiences so that they were not just agreeing with the previous respondent (Bergen and Labonté, 2020). The dual role of teacher and researcher was also considered through the lens of the GTCS standards, so that any research intervention or data collection method would still be complying with the learning and teaching expectations and standards of Education Scotland (SERA, 2005; GTCS, 2012).

All physical data is securely stored in a locked drawer which can only be opened by the researcher and all digital data have been stored using password protected documents (SERA, 2005). Questionnaire and focus group answers have been anonymised, with each focus group member receiving a pseudonym so that pupils' rights to confidentiality and anonymity were recognised (SERA, 2005; BERA, 2018). Audio recordings of the focus groups have been transcribed onto digital documents before being stored securely to increase conformity (BERA, 2018). Care has been taken in transcribing the answers from the audio recordings so that participants' responses are accurate and are communicated in the same tone given by the participant, so they are not misinterpreted (Bournot-Trites and Belanger, 2005).

### 3.7 Limitations

There are several limitations when conducting mixed-method research. When using close-ended questions in the questionnaire, responses are limited which restricts the ability to pursue any avenues of thought or interest that arise during the enquiry (Menter et al., 2011). However, the use of focus groups at the end of the intervention period that can allow for more in-depth discussion and investigation. The use of a Likert scale may also cause issues for participants as there is no way to distinguish if all participants have the same interpretation of each response as one participant's "Disagree" could another's "Disagree a little" (Cohen et al., 2018). Additionally, participants may not know how to respond to a question and opt for the neutral answer of "Neither agree nor disagree" in order to answer the question.

Confidentiality cannot be guaranteed when utilising focus groups as they are made up of multiple participants, which can lead to ethical dilemmas (Molly, 2013). To minimise this, it was made clear that responses shouldn't be shared outside the meetings unless explicitly permitted by the participants. Krueger (2014) also identifies that some participants may start to dominate the conversations, resulting in other participants not being heard/being under-represented. To counter this, the researcher intervened and asked questions to specific pupils so that all pupils were heard so that there is a more rounded and accurate account of perspectives.

A limitation of the teacher log was that there was no investigator triangulation, lowering the credibility of the data collection method as it can be considered biased and subjective without the corroboration of other logs (Musante and DeWalt, 2010). However, limitations of time and cost made it unfeasible to do so. Although confounding variables were partially accounted for by using a homogenous group for the control and target groups, this may have limitations for the external validity of the results obtained. The specific nature of the groups located in one year group in one high school in Scotland may not be able to be validly extrapolated to other/wider contexts as the specific geographical and cultural contexts may render this unreliable.

### **3.8 Summary**

The importance of having a pragmatic research paradigm to structure the mixed-method approach has been established and justified for this research study. Each chosen methods' design and implementation has been discussed and rationalised, as has the reliability and validity of both the quantitative and qualitative data collection. The ethical considerations of this research were then examined and accounted for, illustrating the degree to which the research has been conducted in to make it ethically appropriate. Finally, the methodological limitations of the research are shown to be reflective of this small-scale research study so that other researchers may be aware of methodological shortcomings. The findings generated from all data collection methods and analysis are discussed in the next chapter.

## CHAPTER 4: FINDINGS AND DISCUSSION

This chapter will present the findings and discussion of the data collected from the questionnaires, focus groups and teacher log to attempt to answer the research aim of, ‘to what extent does formative assessment affect pupil motivation in a S1 social subjects classroom?’. Using quantitative and qualitative data, any links between formative assessment and motivation may be determined. The findings will be presented through each research question to ascertain the different aspects of the research aim.

### 4.1 Findings

#### 4.1.1 Formative Assessment Impact on Autonomous Motivation

Mean pre- and post-intervention behavioural engagement scores are displayed in Table 3. These scores were gathered and calculated to comparatively distinguish if the five-week formative assessment intervention had had any impact on autonomous motivation. Overall, it was found there was an increase in behavioural engagement post-intervention in comparison to pre-intervention for both the target group and control group. The pre-intervention score for the control group was 4.82 and post-intervention score was 5.12, indicating an increased behavioural engagement score of +0.30. The pre-intervention score for the target group was 5.21 and post-intervention score was 5.77, indicating an increased behavioural engagement score of +0.56. This indicates a bigger change in the target group’s mean behavioural engagement score by +0.26, potentially suggesting that formative assessment does have a positive impact on autonomous motivation. Considering effect sizes, Cohen’s  $d$  was found to be 0.24, suggesting that there is a small but significant difference between the control and target group (Table 3). However, as the  $p$ -value of the effect size is 0.11 and not  $< 0.05$ , we cannot assume statistical significance, and the null hypothesis of there being no statistical mean difference between means of the control and target group must be accepted. Additionally, the boxplot (figure 5) shows that although the target group median is higher than the control group median, the distribution of the two groups are similar.

	Pre-intervention	Post-intervention	Mean Difference	Effect size	Significance
Control Group	4.82	5.12	+0.296	0.24	0.11
Target Group	5.21	5.77	+0.557		

Table 3: Pre- and Post-intervention Behavioural Engagement results

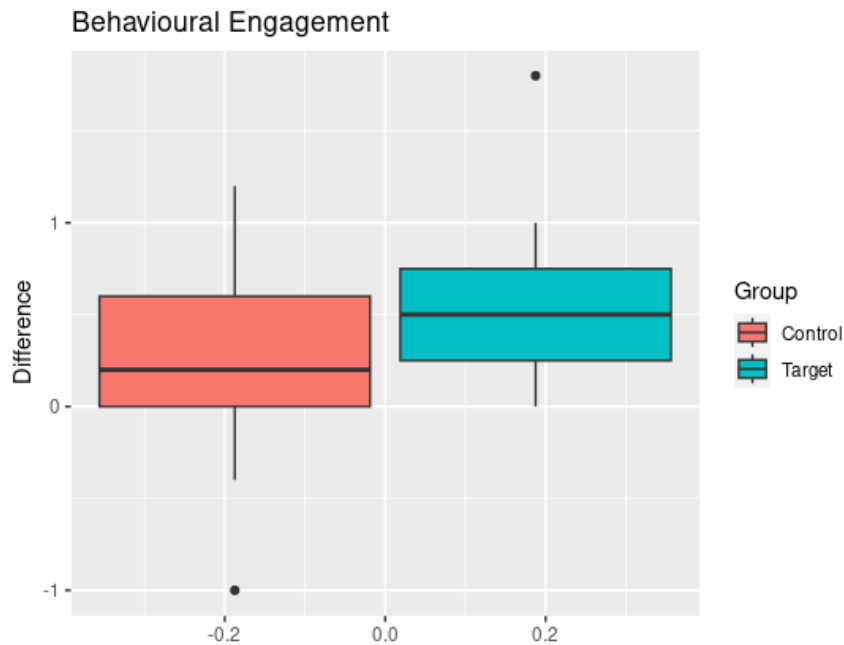


Figure 5: Boxplot diagram of statistical differences between behavioural engagement of the target group and control group.

Pre- and post-intervention autonomous motivation scores are displayed in Table 4. These scores were also gathered to comparatively discern if the five-week formative assessment intervention had had any impact on autonomous motivation. Once again, there was an increase in autonomous motivation post-intervention scores in comparison to pre-intervention scores for both the target group and control group. The pre-intervention score for the control group was 4.19 and post-intervention score was 4.51, indicating an increased autonomous motivation score of +0.32. The pre-intervention score for the target group was 5.03 and post-intervention score was 5.44, indicating an increased score of +0.41. As there is a bigger change in the target groups score, it once again suggests that formative assessment does possibly have a positive impact on autonomous motivation.

The effect size of the mean difference between the target group and the control group is  $d = 0.06$ , suggesting that there is negligible difference between the control and target group (Table 4). However, the significance of the autonomous motivation data has a p-value of 0.724, which is not  $<0.05$ , firmly suggesting the null hypothesis of there being no significant difference between means of the control and target group. The box-plot (figure 6) confirms this showing that the inter-quartile range of the difference between the control and target group are very similar, indicating similar distributions, even if the target group median is slightly higher.

	Pre-intervention	Post-intervention	Mean Difference	Effect size	Significance
Control Group	4.19	4.51	+0.321	0.06	0.724
Target Group	5.03	5.44	+0.404		

Table 4: Pre- and Post-intervention Autonomous Motivation results

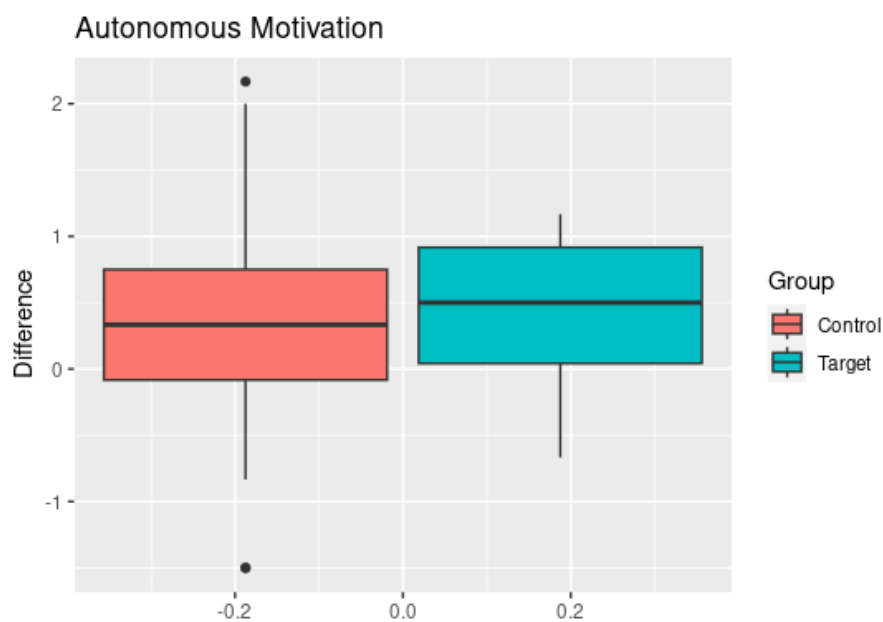


Figure 6: Boxplot diagram of statistical differences between autonomous motivation of the target group and control group.

Focus group data and teacher log data were also used to provide descriptive analysis of the target group behavioural engagement and autonomous motivation scores. In the focus group, pupils were asked if they were focused in class and what kept them focussed during a lesson as a way of understanding the types of motivation exhibited during class. Pupils responded with:

- “Because you made the lessons fun” [followed by two agreements]
- “And easy to understand”
- “...because you get to learn new things and learning stuff is always interesting.”
- “Yes, I think about 90%ish. Yes, most of the time I was focussed... and we have some fun in the class.”

A common theme that emerged from the focus group was that pupils enjoyed being in the class and they were interested in learning new things, which translated into focus. This was also identified in the teacher log, as pupils were focussed on the contents of the lesson and on their work:

- “Pupils asking many questions and trying to gain a better understanding. Vast majority listening, showing engagement and motivation”
- “Pupils view Kahoot [quizzes] as fun so low stakes way of eliciting information from each pupil.”
- “Overall, pupils left the class happy and showed great interest not just in their marks but in the feedback as well.”

The use of formative assessment to get pupils involved and autonomously motivated within the target class can also be evidenced through the theme of a supportive classroom climate. Pupils remarked on the removal of pressure from situations that can tend to be pressure-orientated as well as the concept of there being no wrong answers and seeing learning and interaction as an opportunity, rather than a barrier to enhancing their understanding:

- “It didn’t feel that you were being judged for asking a question, even if it was, like, pretty odd. No one judged.”
- “Our class was a good environment. No matter what you said, nobody judged you.”
- “You never got judged for saying the wrong answer in front of the class.”

The teacher log also evidences this, as the climate of no wrong answers and seeing learning as an opportunity was deliberate:

- “By focussing on an environment of learning and progression/ future steps, it allowed pupils to feel motivated, even with a wrong answer as they know how to improve.”
- “Emphasis on wrong answers being seen as learning opportunities was to ensure that pupils did not focus on them as they did not see the test as summative assessment, which can bring about feelings of anxiety or shame.”

To enhance this climate, a decision was made to allow pupils to ask questions during their end-of-unit test to remove some of the pressure and allow them to feel more comfortable by adding in a ‘safety net’. This allowed pupils to be confident in their abilities by not worrying about the answers they couldn’t do. Pupils made comments about being able to ask questions during the end-of-unit test:

- “It helped a lot, it like took away some of the pressure that we had.”
- “[Four agreements]. In other subjects you don’t ask questions.”
- “It did take a lot of the pressure off. If you are really stuck then, instead of just guessing, you get a bit of help.”

Considering the teacher perspective of this intervention, it was clear that being able to ask questions during the test benefitted the pupils. Pupils received immediate feedback on their work, allowing them to act upon it immediately and cater for their individual learning needs in real-time. It was of great importance to the teacher to make sure that when helping the pupils, responses would be given through phrasing the question a different way or by targeting part of the pupil’s current answer and getting them to elaborate on it. This would ensure that it was still the pupil’s answer and their knowledge as most of the questions asked were due to the pupils’ confidence rather than any lack of ability.

#### **4.1.2 Formative assessment Impact on Controlled Motivation**

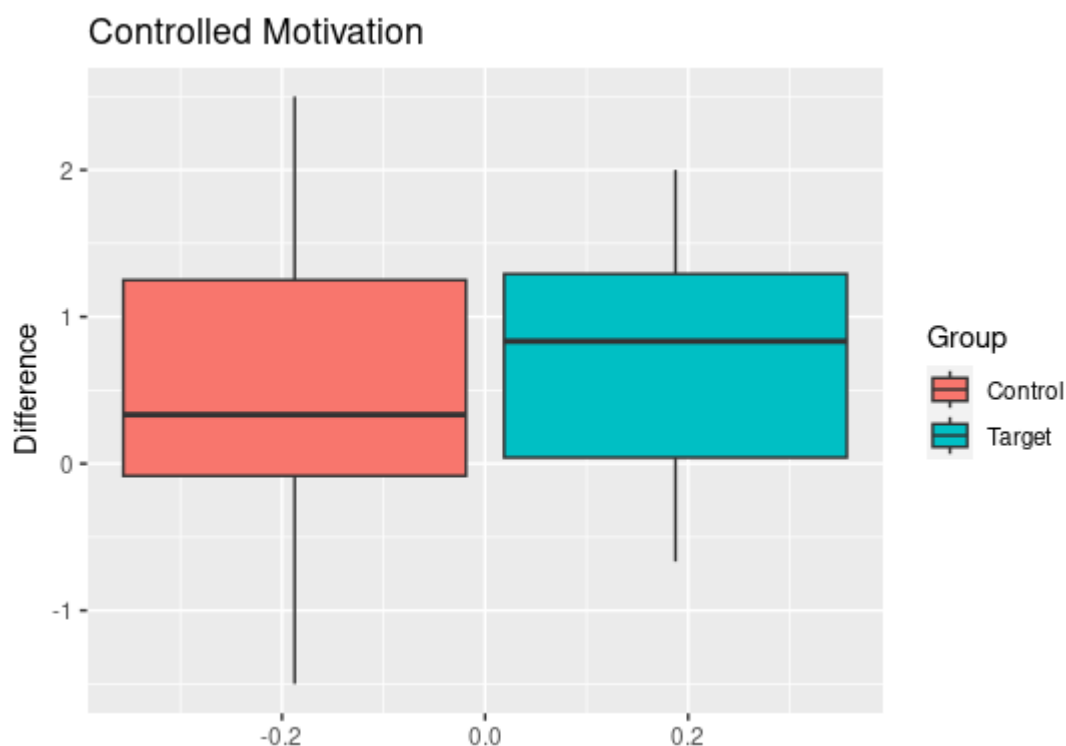
The quantitative pre- and post-intervention results for controlled motivation can be found in Table 5. These scores were gathered and calculated to comparatively distinguish if the five-week formative assessment intervention had had any impact on controlled motivation. The difference between pre- and post-intervention mean scores indicates that there was an increase

in both the control and target groups' controlled motivation. The pre-intervention score for the control group was 4.83 and post-intervention score was 5.26, indicating an increased controlled motivation score of +0.43. The pre-intervention score for the target group was 4.79 and post-intervention score was 5.46, indicating an increased controlled motivation score of +0.67. Surprisingly, there was a bigger change in the target group score, suggesting that the implementation of formative assessment strategies can have a bigger positive impact on controlled motivation.

The effect size of the controlled motivation mean difference between the target group and control group is  $d = 0.22$ , insinuating there is a small, significant difference between the control and target group (Table 5). However, the p-value for controlled motivation is 0.62, which suggests that there is no significant difference between the means of the control and target group as the p-value is not  $<0.05$ . The box-plot (figure 7) shows once again that although there is a sizable difference in medians of the control and target groups, the inter-quartile ranges of the two groups are very similar, illustrating similar distributions.

	Pre-intervention	Post-intervention	Mean Difference	Effect size	Significance
Control Group	4.83	5.26	+0.424	0.22	0.62
Target Group	4.79	5.46	+0.678		

*Table 5: Pre- and Post-intervention Controlled Motivation results*



*Figure 7: Boxplot diagram of statistical differences between controlled motivation of the target group and control group.*

The focus group and teacher log was used to gain insight into why controlled motivation has increased more for the target group than the control group. Although pupils didn't feel pressure to answer in class (Chapter 4.1.1), they did feel pressure to answer correctly during tests. Even though this was attempted to be minimised, pupils still felt expectations from those around them to do well:

[Thinking about the test, were you ever scared about getting answers wrong?]

- "Of course" [Three agreements]
- "It wasn't from, like, you. It was expectations to do well in general."

[Where do these expectations come from?]

- "Friends and family."
- "Mostly friends."
- "It comes mostly from family for me. I have this expectation that I have to get all of them right, or most of them right and one wrong."

Pupils already feel external pressure to do well at any test due to competition amongst friends and classmates as well as being spurred on by external factors such as family attitudes. This has led pupils to be thinking about their futures and the consequences of doing well in every test:

[Why do you think it's important to get good marks in Social Subjects?]

- "It depends on what job you want and what you want to do."
- "For exams."
- "The more you do get, the more you can get later."

However, some pupils recognise that it is isn't as important while they are in S1:

- "I feel that as we get older you will need to get better marks so I don't feel it's that much important now."
- "Even if you don't get great marks, it's more to learn from in the future"

Although some pupils don't consider test marks to be as important in S1, they are still linking future trajectories to summative assessment scores and external motivations rather than learning for learning's sake. There is a clear emphasis from the pupils' perspectives that learning is still associated with testing, and testing is the indicator for doing well. Overall, both autonomous and controlled motivation have increased as the learning unit progressed.

#### **4.1.3 Pupil Perspectives of Formative Assessment Strategies**

Pupils shared a range of perspectives on formative assessment strategies through the focus groups and this was corroborated by the teacher log data. Various themes emerged that highlighted pupils' thoughts on individual strategies as well as strategies that are intertwined. One prominent theme that emerged was pupils' use of formative assessment to gauge and enhance understanding. Many pupils highlighted that by using strategies such as feedback and questioning, their understanding improved, which led to more self-regulation:

[Do you feel that questioning helped you understand the subject better?]

- “Yes, it helped to hear what other people said about it. By answering questions, yes.”
- “It gave me a further understanding of things to go over to answer the questions.”
- “It definitely made me feel that I knew more.”

[Do you feel that feedback helped you improve your own learning?]

- “Every task we did, you would come round to check how we had done. The feedback you gave there helps, it helps you focus on the things you didn’t do so great. It helped you get better.”
- “And see what level you are working at so that you can try to maintain that level.”
- “Yes, because it’s like good encouragement, because it lets you know your doing well. If it’s not so good then it’s encouraging that you could do better.”

By using questioning and feedback to help pupils, it allowed them to understand their strengths and weaknesses within particular answers and gave them agency to improve or maintain the level of work they were engaged with. This was then coupled with learning goals within lessons or pieces of work to provide pupils with criteria to allow them to identify their own learning targets as well as select appropriate strategies to reach those targets:

- “Like when I was doing the poster, I like to set myself a level and try and reach it.”

However, some pupils felt that learning intentions and success criteria weren’t always beneficial. Pupils believed that sometimes the learning targets were superficial and suggested that the learning goals presented at the start of the lesson were forgotten about when it came to doing the work:

- “Yes, it depends what [the learning goal] is. Sometimes it could feel like it is just there for the sake of it, but sometimes if it is a trickier subject and you need to know what you need to accomplish it can be really helpful.”
- “[the learning targets would go] in one ear and out the other.”

Pupils agreed that if learning intentions and success criteria were utilised *during* the lesson, when it was time to complete that specific target as well as at the start and end of lessons then it would be more beneficial to them:

- “Yes, I think that would help. Like, sometimes you feel that you are doing a task just for the sake of it and it’s not really important you don’t know what Learning Intention is.” [Two agreements]

Another discernible theme from pupils’ responses and the teacher log was confidence. When pupils were self-assessing their own understanding, they were regularly asked about their confidence levels when learning a new concept by using the ‘fist of five’ strategy, in which pupils held up fingers indicating how confident they were, with a zero (fist) indicating completely unsure and five (all fingers) being very confident. This allowed for the elicitation of information to then know which pupils to target with help:

- “Pupils were asked on their confidence of relief rainfall (to be able to explain it) before and after the recap. Using ‘fist of five’, majority of pupils gave twos and threes before the recap and then fours and fives after the recap.”

Pupils were also asked about confidence and motivation. When asked if they were motivated to do things they are good at, two pupils said “yes”. However, when asked if they were motivated to do things they weren’t so good at, only one pupil said “yes” and three pupils said “no” or “not so much”. When asked why, pupils responded thus:

- “Sometimes I will feel good when I am on my own. When it is something I know the gist of I will feel confident on my own, but if it is something that I am not confident on I am the person to go and ask someone and we will end up doing it as a pair even though it was an individual task. Just because I am not confident.”

This indicates a direct link between confidence and motivation if pupils are to be successful in their attempts to be able to go and complete a task by themselves, whether that be a task they

are good at or not. This led to an emphasis on pupils' effort to enhance autonomous motivation in tasks that were difficult:

- “By focussing on pupils' effort, it meant that pupils who aren't particularly capable did not become unmotivated and saw the value in their work.”

Peer-assessment as a formative assessment strategy was also utilised to enhance understanding and confidence. Immersing pupils in the criteria required for the tasks allowed them to better understand the learning goals and ultimately provide better feedback to their peers. Some pupils did see the value in peer-assessment as a result:

- “I do, because you got to see what they had done and see if it was different to yours and see if there was anything you could improve on from seeing theirs.”
- “And it was honest answers ... I swapped with [X] and...they did say it was good and then they said it wasn't good. I did take on board some of the things.”

However, some pupils pointed out that the peer-assessment wasn't as effective as some of the other formative assessments due to how their partners treated the exercise:

- “It's hard, cos people will be people...most likely, because I *was* working with my friends. They know that I will be fine if they take the mickey.”
- “It depends who it comes from and their personality. They may treat it as a joke.”
- “No...they were laughing at my drawings.”

This suggests that peer-assessment may be more effective if it is done with pupils they are not as close with for the strategy to be taken more seriously, or if expectations about effort and the formative assessment task are discussed beforehand.

## **4.2 Discussion**

The findings of each research question will be discussed in relation to the research aim and wider literature in this sphere of study. Overall, three main trends appear from the data:

- Formative assessment strategies do have a positive impact on autonomous motivation
- Formative assessment strategies do have a positive impact on controlled motivation
- Pupil perspectives of formative assessment strategies indicate that the strategies help to enhance understanding and confidence.

#### **4.2.1 Formative Assessment Impact on Autonomous Motivation**

As stated by Education Scotland (2021), assessment needs to be integrated into learning and teaching activities and experiences, along with motivation and challenge. Considering this and RQ1, the findings of this research do evidence that formative assessment can have a positive impact on not only pupils' motivation, but more specifically their autonomous motivation.

As presented in chapter 4.1.1, there is a bigger increase in post-intervention behavioural engagement and autonomous motivation questionnaire scores for the target group in comparison to the control group, with there being a difference of +0.26 and +0.09 respectively. This suggests that the implementation of formative assessment does play a part in the motivation of pupils. The effect sizes of the findings in this research study are smaller than those found in Näsström et al's (2021), and as previously stated, insignificant, unlike Leenknecht et al's (2021) research. The study hypothesis could still however be true as the research is underpowered due to the small sample size (Visentin et al., 2019). Additionally, control group teachers were also implementing formative assessment which could be enhancing scores (Baas et al., 2019), hence the increase in both control group and target group scores. Overall, there is still a bigger increase in autonomous motivation and behavioural engagement in the target group and this can offer insight into the efficacy of formative assessment as a tool to promote motivation within the classroom.

This study attempts to offer the insight into efficacy of formative assessment to promote motivation by evidencing pupils' perspectives on the potential reasons for increased autonomous motivation, unlike Näsström et al's (2021) research. Reasons for autonomous motivation are indicated through pupils' enjoyment and engagement, as pupils referenced that the fact they didn't feel pressure to be wrong and that no one judged them in the class. They also felt confident to ask and answer questions about the learning, enhancing their understanding and interest in the subject. In contrast to Leenknecht et al.'s (2021) work, that

found that classroom discussions and activities can also promote controlled motivation, a supportive classroom climate was found to enhance pupils' feelings of autonomy and relatedness (Ryan and Deci, 2000). The findings suggest that the enthusiasm shown by pupils to participate in the learning also produced deeper learning as pupils weren't trying to surface learn but be actively involved by asking and answering questions and giving each other feedback. The feedback pupils received throughout the lessons and end-of-unit assessment was also consistently real-time, which allowed pupils to act upon it and be involved in the learning dialogue, as they were able to ask clarifying questions if they were not entirely sure of the feedback given to them. This enhanced their feedback literacy and their autonomy in receiving feedback, which has the potential to promote their self-regulation. This has been shown to motivate pupils as they prefer approaches to learning that involve *them* as they find it stimulating and entertaining (Evans et al., 2014; Education Scotland, 2021). This comfort and safety created by a positive classroom climate meant that pupils could experiment and take risks within their work, ultimately providing them with more autonomy as they are not constrained to classroom norms, as well as making them more likely to disclose their understanding (CERI, 2008; Deci and Ryan, 2016; Johnson et al, 2019).

By viewing being wrong as a fundamental part of learning, pupils can perceive any piece of work that needs improved as a learning opportunity, which enables them to self-regulate better as they can identify the learning goals required, select strategies to get them to the learning goals and then monitor their progress towards the goals (Black and Wiliam, 2009; Meusen-Beekman et al., 2015; McMillan and Moore, 2020). Overall, the findings agree with Näsström et al.'s (2021) research, as they also find that pupils' perceptions of formative assessment were positively associated with autonomous motivation across all formative assessment strategies.

#### **4.2.2 Formative Assessment Impact on Controlled Motivation**

As motivation is multi-faceted and pupils can be motivated in different ways (Ryan and Deci, 2000), the impact of formative assessment on controlled motivation must also be discussed to gain a more complete picture of the research aim. To answer RQ2, the findings of the research conclude that formative assessment does have a positive effect on controlled motivation.

The change in comparison pre- to post-intervention scores between the target group and control group show that there was a positive comparable difference of +0.24 for the target group. This

indicates that formative assessment does in fact have a small, positive impact on controlled motivation. Although the effect size of 0.22 is not significant, the alternative hypothesis of formative assessment impacting controlled motivation may still hold true for the reasons of effect size and teacher delivery outlined in Chapter 4.2.1.

Considering reasons for the positive comparable difference between the target and control group, pupils expressed increased pressure during the end-of-unit test, which stemmed from competitiveness between peers as well as expectations from family. The competition and expectations are prominent ideas within controlled motivation (Ryan and Deci, 2000). Family expectations have been shown to undermine pupils' experience of autonomy and generate external motivation to avoid feelings of guilt or shame. This can constrain learning as when pupils feel pressured to learn and do well, they are less likely to engage in deep learning (Deci and Ryan, 2016). A study produced by Deci and Ryan (2016) identifies that when families are less autonomy-supportive and impose more pressure, pupils are less likely to be able to self-regulate and think for themselves, while also being more perfection-orientated, which is similar to the pressure described by the pupils in this research study.

The competition amongst peers also promotes external rewards such as pride and ego-boosting. This leads pupils to focus on the marks they are getting for their tests rather than the feedback on how to improve their learning, lowering self-regulation and promoting the memorising and surface learning of content (Shepard, 2017). Focus on future trajectories is furthering this type of controlled motivation as Bølling et al. (2018) and Winberg et al. (2019) both convey a negative change in pupils' perceptions of enjoyment and stimulation within learning as they progress through their schooling with summative assessments becoming a focal point in the later years. By having S1 pupils already evidencing that assessment marks are important to progression, it highlights the tensions between effective formative assessment in the classroom with the accountability of summative assessment within Scottish schools (CERI, 2008).

### **4.2.3 Pupil Perspectives of Formative Assessment**

Descriptive pupil perspectives are often under-researched within formative assessment research, with research either focussing specifically on only gathering quantitative data (Heitink et al., 2016; Muho and Taraj, 2022) or only gathering teacher-centric perspectives (Andersson and Palm, 2018; Näsström et al., 2021). It is imperative to gather qualitative pupil

perspectives as they are the primary users and recipients of formative assessment strategies, and their voice is important in formative assessment research.

Pupils voiced that formative assessment has a major impact on their understanding of subject content. Although this is not a new revelation and is evidenced in research (see Shepard, 2017; McMillan and Moore, 2020; Muho and Taraj, 2022), their perspectives offer more insight into *how* formative assessment enhances understanding. Pupils indicated that questioning and feedback, coupled with learning targets, generated dialogue that produced opportunities for feedback and learning. By imparting focussed and informational feedback, pupils were able to gauge the level of work they are currently working at and become more self-regulating as they knew the strengths and weaknesses of their answers, and viewed mistakes or weaker answers as key information (Black and Wiliam, 2009; Education Scotland, 2021). By doing so, pupils are more engaged with the work as they can select the most appropriate strategies to improve or maintain the level of work. This, in turn, created a positive learning environment where pupils felt competent and autonomous in their own learning, which is similar to other studies' (Brookhart et al., 2009; Heitink et al., 2016; Johnson et al., 2019) findings concerning motivation, self-regulation and pupils being active participants.

Confidence was another prominent theme that pupils regarded. Confidence grew through self-assessment and motivated pupils to self-regulate through reflection. Self-assessment allowed pupils to be active participants in the regulation of their learning, creating positive attitudes about their learning (Panadero et al., 2018; Perry et al., 2020). Pupils were confident giving honest interpretations of their level of understanding, meaning that more meaningful feedback could be generated and imparted to them. It also meant that pupils were more realistic about their own progress and goal setting, enhancing their self-regulation, even if it meant additional input or scaffolding from the teacher to reach their goals (Moss and Brookhart, 2019). However, confidence to complete tasks was not always guaranteed. Pupils were divided on whether they were motivated to do tasks they were not particularly good at. This suggests that self-regulation and resilience aren't as apparent as initially suggested, as pupils aren't able to create the conditions necessary to regulate their motivation and engagement to reach the learning target (Xiao and Yang, 2019; Vattøy and Smith, 2019). The timing of learning targets introduced by the teacher may also impact pupils' resilience. Pupils had forgotten or were unsure of the learning targets that were discussed at the start of lessons, which may have added a barrier to motivation and self-regulation as pupils weren't sure what they were trying to

achieve with each piece of work during the lesson. This echoes Crichton and McDaid's (2016) assertion that there is a discrepancy between the actual and intended outcomes of learning target implementation as learning intentions and success criteria are not being discussed enough during lessons.

Pupils also demonstrated a mixed-response to the implementation of peer-assessment as a formative assessment strategy. Although using peer-assessment has the potential to give pupils responsibility to be more active participants in their learning and allow them to hear other perspectives on their own learning (Heitink et al., 2016; Johnson et al., 2019), pupils felt that the feedback they were receiving wasn't always beneficial. Pupils did not always take peer-assessment seriously and pupils often received negative and unfocussed feedback as a result, which can impede motivation as pupils do not trust the feedback or see the exercise as meaningless (Moss and Brookhart, 2019).

### **4.3 Summary**

The research findings evidenced that formative assessment does positively impact both autonomous and controlled motivation, as well as identifying that pupils thought formative assessment strategies enhanced their understanding and confidence, when implemented appropriately and conducted in a fashion that is taken seriously. The findings were then discussed in relation to current policy and literature, highlighting similarities and differences found. The following chapter will evaluate the research carried out and outline the limitations and recommendations that would strengthen this enquiry.

## **CHAPTER 5: CONCLUSION AND RECOMMENDATIONS**

This research study aimed to understand the extent to which formative assessment can impact motivation in a S1 social subjects classroom. This chapter will summarise the key findings of the previous chapter in reference to the research aim and research questions. This chapter will also discuss the limitations of the overall research. Finally, this chapter will also discuss how the research findings will be disseminated as well as provide recommendations if this research was to be carried out in future.

### **5.1 Summary of Key Findings**

The research found that the implementation of formative assessment positively increased both behavioural engagement and autonomous motivation, with bigger increases for the target group compared to the control group. When examining why this change had occurred, the focus group and teacher log data suggested a positive classroom environment when using formative assessment, enhancing pupils' sense of autonomy and relatedness. Additionally, pupils saw learning as an opportunity as mistakes or improvements needed were viewed beneficially, which allowed them to better self-regulate, as they were identifying their own strengths and weaknesses and monitoring their progress towards the learning goals. The research also concluded that formative assessment positively increased controlled motivation, with a bigger increase for the target group compared to the control group. A perceived reason for this is expectations from friends and family, heightening pupils' controlled motivation as they are trying to avoid feelings of guilt and shame, thus pupils becoming more motivated to surface learn, rather than engage with deeper learning. Furthermore, pupils were also already considering their future trajectories, which can lead to negative impacts on motivation as they do not view learning as interesting and enjoyable but as a necessity to progression.

Finally, pupils' perspectives indicated that formative assessment increased their understanding and confidence. Pupils perceived that questioning, feedback, learning targets and self-assessment increased their self-regulation and allowed them to be more motivated when attempting and completing their work as they understood how to improve on their mistakes or answers and were able to implement more appropriate strategies. However, learning targets

need to be stressed during tasks and not just at the start of lessons if they are to be more effective. Additionally, the mixed perceptions of peer-assessment suggests that it must be conducted in a way in which it is taken seriously, and pupils take the opportunity to give meaningful feedback, rather than superficial or negative feedback. If conducted effectively, pupils distinguished that peer-assessment generated more confidence in the learning goals and present other perspectives on their work.

## **5.2 Limitations of the Research**

There are several limitations to this study, some of which have already been discussed in Chapter 3.7. One limitation to this study is the small sample used for the quantitative and qualitative data collection. As only 41 pupils participated overall, the research findings were significantly underpowered, and this is potentially why none of the effect sizes were found to be significant. This also limited the use of focus groups as only 14 pupils were participating in the target group, meaning that there was only a small pool to draw from which limits the generalisability of the focus group findings. Another limitation to the research study were time constraints, as the research was only carried out over a short time-frame, limiting the amount of lessons delivered and formative assessment strategies that could be implemented. However, this was outwith the researcher's control due to school holidays and a change of school timetable. A further limitation was the singular collection of the teacher log, which was carried out by the researcher. Due to the dual role of the teacher *as* researcher, the teacher log could be considered biased as the researcher may only have evaluated or commented on themes or observations that helped the research enquiry. However, this limitation was attempted to be minimised by following the structure and design laid out by Glennie et al. (2017), Rowan and Correnti (2009), and Näsström et al. (2021) for the teacher log. A final limitation of the study was the focus of the questionnaire and focus group items, as some questionnaire items were vague, which can lead to multiple interpretations of what is being asked (Braun et al, 2012), and can skew the findings of the research.

## **5.3 Dissemination**

The outcomes of this research will be first shared with pupils and parents, who will be able to receive a copy of the research findings as a written summary. Findings will also be shared at a social subjects department meeting to inform colleagues who were part of the study. This will

ensure that the research will be visible and will have a social impact on the stakeholders involved (Trainor and Graue, 2014; Marín-González et al., 2017). The local authority's education priorities strategic plan and national regulating body's policy is to promote personal and collegiate responsibility for improved learning and teaching through professional learning and collaboration (GTCS, 2012; Moray Council, 2021b), therefore a CLPL seminar will be delivered to colleagues in both the school and local authority who wish to engage in professional dialogue about pupil motivation.

The research will also be shared amongst colleagues across Scotland through the Scottish Association of Geography Teachers (SAGT) as an informal summary paper as well as potentially be added to Glasgow University's Enlighten, the open access repository, so that the research can be shared with current and future students and staff who may wish to draw upon it.

#### **5.4 Recommendations**

Considering the limitations and evaluation of the research, there are several recommendations the researcher would make if the research study was carried out in future. One such recommendation would be to have a bigger sample size, for the findings to be more reliable and valid and have the potential to be more significant. A bigger sample size would also allow for more or bigger focus groups to be conducted, allowing for more perspectives and insight into formative assessment to be elicited. Another recommendation would be to start the intervention phase earlier, so that the intervention could run for longer and more formative assessment strategies could be implemented. This would allow for a wider range of experiences and contexts.

Having teacher logs completed by more than just the researcher would also be beneficial. An independent and impartial observer may be more suited to giving reliable and valid data but the researcher is aware of the time and cost of having an additional observer in the classroom. Finally, a trial run of the questionnaires and focus groups with pupils would be recommended to identify any questions or items that may be confusing or vague to the pupils, so that they can be changed to better suit their needs and those of the enquiry.

## 5.5 Conclusion

The aim of this research study was to assess the extent to which, if any, formative assessment impacts motivation of S1 pupils in a social subjects class. To better understand and explore the relationship between formative assessment and motivation, quantitative data was collected to test if there was a statistical difference between target and control group classes. Additionally, the research study sought to draw upon pupils' perceptions and experiences of formative assessment to enhance understanding of how it affects motivation by providing the 'why' to the 'what's changed?'. The findings of the research demonstrate that formative assessment has a positive impact on both autonomous and controlled motivation, which confirms many previous studies' findings. Although the results are under-powered and are limited to a single-school context, by expanding the research to more schools and more pupils, the research has the capacity to show in more depth the capabilities of formative assessment as a stimulus for motivation. The BGE phase is such an important time for young learners, so it is imperative that their motivation is maintained, and formative assessment has demonstrated that it can promote behavioural engagement and motivation. This will ensure that pupils continue to be stimulated and supported, making them self-regulated learners that can broaden their skills as they progress through school. One of the core tenets of a CfE is to develop successful learners who are enthusiastic and motivated: formative assessment offers insight into how we can do this through enhancing pupils' understanding and confidence in a context that benefits and supports all.

# **APPENDICES**

Appendix A – Ethical Approval

Appendix B – Plain Language Statement

Appendix C – Target Group Consent Form

Appendix D – Control Group Consent Form

Appendix E – Questionnaire Items

Appendix F – Focus Group Questions

Appendix G – Focus Group Transcript Excerpt

Appendix H – Teacher Log Excerpt

# APPENDIX A – ETHICAL APPROVAL



06/04/2023

Dear William

## School of Education Research Ethics Committee

**Project Title:** Programme Approval MEd (Prof Prac)

**Application No:** 402220159

The School of Education Research Ethics Committee has reviewed your application and has agreed that there is no objection on ethical grounds to the proposed study. It is happy therefore to approve the project, subject to the following conditions:

- Start date of ethical approval: 03/04/2023
- Project end date: **31/08/2023**
- Any outstanding permissions needed from third parties in order to recruit research participants or to access facilities or venues for research purposes must be obtained in writing and submitted to the School of Education Research Ethics Administrator before research commences. Permissions you must provide are shown in the reviewer feedback form, titled *Notification of Ethics Application Outcome*, that has been sent to you.
- Data collected should be held securely for the period you indicated in the application and any personal data collected should be appropriately managed in accordance with the General Data Protection Regulation.
- The research should be carried out only on the sites, and/or with the groups and using the methods defined in the application.
- Any proposed changes in the protocol should be submitted for reassessment as an amendment to the original application. The *Request for Amendments to an Approved Application* form should be used, which can be found in the 'Download Templates' section of the [Research Ethics System](#).

Provided on behalf of: School of Education Research Ethics Committee  
The University of Glasgow  
[Education-ethics@glasgow.ac.uk](mailto:Education-ethics@glasgow.ac.uk)

School of Education Ethics Committee  
University of Glasgow  
School of Education, St Andrew's Building, 11 Eldon Street  
Glasgow G3 6NH

# APPENDIX B – PLAIN LANGUAGE STATEMENT

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## Plain Language Statement

Researcher: [REDACTED]

Email: [2260707w@student.gla.ac.uk](mailto:2260707w@student.gla.ac.uk)

### **To what extent does formative assessment affect pupil motivation in a S1 social subjects classroom?**

You are being invited to take part in a research study. Before you decide whether or not to take part in the research, it is important that you understand why the study is being carried out and what it will involve. Please take the time to read through the following information and discuss it with your parents/carers. Please feel free to ask me any questions that you may have regarding the study or if you would like more information if something is not clear.

Thank you for reading this.

#### **What is the purpose of the study?**

The purpose of this study is to better understand whether formative assessment has an impact on the motivation of pupils within a S1 social subjects classroom. The results will be used to enhance learning and provide additional support within the social subjects classroom as well as generate evidence as to how we should best support our learners as they progress through high school.

Formative assessment is used to monitor pupil learning to identify strengths as well as identify areas that can be improved on. This information is then used to provide feedback to teachers to improve their teaching and to students to improve their learning.

#### **Why have I been chosen?**

Every member of the S1 cohort has the opportunity to take part in the study.

#### **Do I have to take part?**

You do not have to take part and your involvement or non-involvement in the research will not impact your classwork in any way.

#### **What will happen to me if I take part?**

You will answer a questionnaire on your motivations and engagement within the social subjects class. Once this has been completed, normal classwork will take place for the remainder of the term with formative assessment interventions being integrated into

classroom exercises. This will not affect the teaching and delivery of the social subjects materials. At the end of the term, you will then answer another questionnaire on your motivations and engagement within the class. Finally, some pupils in [REDACTED] 1Y class may also be asked to take part in a focus group meeting. This will be used as a way to hear about your own as well as your peers' thoughts of formative assessment strategies in more depth and how they impacted your motivation and engagement.

**Will my taking part in this study be kept confidential?**

Please note that assurances on confidentiality will be strictly adhered to unless evidence of wrongdoing or potential harm is uncovered. In such cases the University may be obliged to contact relevant statutory bodies/agencies.

All names and other material likely to identify individuals will be anonymised. The material will be treated as confidential and kept in secure storage at all times. The material will either be destroyed once the project is complete or will be retained in secure storage for use in future academic research as material may be used in future publications, both print and online.

**What will happen to the results of the research study?**

1. The results of the research study will be shared with all students and parents/carers.
2. The work may be published as a part of an education journal/review.
3. The study may be presented to other teachers in the school/ local authority as part of a career long professional learning (CLPL) training.

**Who has reviewed the study?**

The study been granted ethical approval by [REDACTED], Headteacher of [REDACTED] School, and the School of Education Ethics committee.

**Contact for Further Information**

If you have any concerns regarding the conduct of this research project, you can contact the School of Education Ethics Officer, Paul Lynch at email: [paul.lynch@glasgow.ac.uk](mailto:paul.lynch@glasgow.ac.uk)

# APPENDIX C – TARGET GROUP CONSENT FORM



## Consent Form

Title of Project: **To what extent does formative assessment affect pupil motivation in a S1 social subjects class?**

Name of Researcher: [REDACTED]  
Name of Supervisor: William McGuire  
School of Education Ethics Officer: Paul Lynch  
Email: [paul.lynch@glasgow.ac.uk](mailto:paul.lynch@glasgow.ac.uk)

### Consent statements

**Please tick as appropriate**

- Yes ☐ No ☐ I confirm that I have read and understood the Plain Language Statement for the above study and have had the opportunity to ask questions.
- Yes ☐ No ☐ I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason.
- Yes ☐ No ☐ I consent to focus group interviews being audio-recorded.
- Yes ☐ No ☐ I acknowledge that there will be no effect on my classwork arising from my participation or non-participation in this research.

### Participation Statement

I agree to take part in this research study ☐

I do not agree to take part in this research study ☐

Name of Participant .....

Signature ..... Date .....

Name of Parent/guardian .....

Signature ..... Date .....

..... End of consent form .....

# APPENDIX D – CONTROL GROUP CONSENT FORM



## Consent Form

Title of Project: **To what extent does formative assessment affect pupil motivation in a S1 social subjects class?**

Name of Researcher: [REDACTED]  
Name of Supervisor: William McGuire  
School of Education Ethics Officer: Paul Lynch  
Email: [paul.lynch@glasgow.ac.uk](mailto:paul.lynch@glasgow.ac.uk)

### Consent statements

**Please tick as appropriate**

- Yes ☐ No ☐ I confirm that I have read and understood the Plain Language Statement for the above study and have had the opportunity to ask questions.
- Yes ☐ No ☐ I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason.
- Yes ☐ No ☐ I acknowledge that there will be no effect on my classwork arising from my participation or non-participation in this research.

### Participation Statement

I agree to take part in this research study ☐

I do not agree to take part in this research study ☐

Name of Participant .....

Signature ..... Date .....

Name of Parent/guardian .....

Signature ..... Date .....

..... End of consent form .....

# APPENDIX E – QUESTIONNAIRE ITEMS

## Dissertation Questionnaire Items

### Items measuring behavioural engagement

1. I am always focused on what I'm supposed to do during lessons.
2. I use all of the time during lessons to do my work.
3. If I find something difficult during the lesson, I make a strong effort to try to understand it.
4. During lessons, I do not think about anything other than what I am supposed to learn.
5. I always try to learn as much as possible in this class.

### Items measuring autonomous motivation

6. When I am completing tasks during a lesson, I do it because it is good for me.
7. When I am completing tasks during a lesson, I do it because I want to learn new things.
8. When I am completing tasks during a lesson, I do it because it is fun.
9. When I am completing tasks during a lesson, I do it because I like it.
10. When I try to learn the content of social subjects' lessons, I do it because it's fun to learn new things.
11. When I try to learn the content of social subjects' lessons, I do it because it's interesting.

### Items measuring controlled motivation

12. When I am completing tasks during a lesson, I do it because I want the teacher to think that I am a good student.
13. When I am completing tasks during a lesson, I do it because I will feel ashamed if I don't do them.
14. When I am completing tasks during a lesson, I do it because the teacher says I should do it.
15. When I try to learn the content of social subjects' lessons, I do it because others think it is important that I get the best marks possible.
16. When I try to learn the content of social subjects' lessons, I do it because I will feel bad if I don't perform well.
17. When I try to learn the content of social subjects' lessons, I do it because it's expected of me.

## APPENDIX F – FOCUS GROUP QUESTIONS

### Questions measuring behavioural engagement:

1. What strategies do you use to stay focused during lessons? What distracts you in class?
2. How do you motivate yourself to learn as much as possible during class?
3. Have you ever found something difficult during a lesson? How did you try to understand it?

### Questions measuring autonomous motivation:

1. Do you enjoy learning? If so, why?
2. What do you find fun about completing tasks during a lesson?
3. How important is it for you to learn new things during class?
4. How do you feel when you learn new things?

### Questions measuring controlled motivation:

1. Have you ever felt pressure to do well in class? If so, how did it affect your motivation to learn?
2. Did you ever feel scared of getting the answer wrong?
3. How important is it for you to get good marks in social subjects? Why?
4. Do you ever feel like you have to complete tasks during class because someone else expects you to? If so, who?
5. Have you ever felt ashamed for not completing tasks during class? If so, why?
6. How important is it for you to follow the teacher's instructions during class?

### Questions gathering evidence about pupils' perspective on formative assessment:

1. Do you feel like the teacher's questioning help you understand the subject better?
  2. How often does the teacher ask questions related to the Learning Intentions and Success Criteria?
  3. Do you feel like you can voice your own opinions and talk about the subject during class?
  4. Have you ever used feedback to improve your own learning? If so, how?
  5. How do you feel when your teacher/ peers give you feedback? Is it beneficial?
- 
1. Do you understand the assessment criteria used in social subjects? If not, what could be done to help you understand them better?
  2. How confident do you feel when completing tasks by yourself?
  3. Do you feel like you know how well you're doing in social subjects? If not, why?
  4. Have you ever received feedback from your peers on your work? If so, how did it help you improve?
- 
1. Have you ever set goals for your own learning? If so, what were they?
  2. How often do you reflect on your own learning and progress?
  3. How do you identify your strengths and weaknesses in learning?

# APPENDIX G – FOCUS GROUP TRANSCRIPT

## EXCERPT

(2260707W)

Dissertation Interview Transcript

### Section 1

Date of Interview	7 June 2023
Information Sheet Issued	Yes
Consent Form Explained and Signed	Yes
Title of Group	Focus Group 1
Names of Participants	A, B, C and D
Age/Stage	All the participants were S1 pupils at [REDACTED] School

### Section 2

*The first question I want to ask you about is, see when you were doing Social Subjects, were you focussed in class? Would you say that you were focussed half of the time, 80% of the time, 100% of the time, what do you reckon?*

I would say most of the time.

I would say most of the time as well, unless there was something that was, like, on my mind constantly, I'd be focussed. Like 90% probably.

*What kept you focussed, or what was it that made you want to sort of stay focused?*

Just getting the work done.

Enjoying the subject.

The same.

Probably like because you get to learn new things and learning stuff is always interesting. No matter what the subject is.

*So, the last topic we did was on weather, which had a couple of tricky things in it, a couple of tricky concepts. So, see when you found something difficult during the lesson how did you try to understand it or what helped you to understand it?*

I would read over it and if I still didn't understand it I would ask a friend or I would ask you.

I am the same. I would read it over a few times and if I didn't understand it, I would ask friends around me and if I still couldn't understand it I would ask you.

Yes, I'm the same.

I would break it up and if I still didn't understand it, I would ask you or a friend.

*And did you find that helpful? Did you find when you asked someone else or you asked me it made the concept easier?*

Yes – unanimous

## APPENDIX H - TEACHER LOG EXCERPT

Date:

so that pupils expanded their answers.

### Implementation

- \* Self-monitoring answers as it allowed pupils to change any answers without any fear of shame while also consolidating their learning.
- \* Pupils responded well to personal experiences, with many of the class keen to offer up their stories, demonstrating buy-in.
- This then allowed the videos to be more effective as pupils could relate symptoms to themselves.
- Going through the answers/notes at the end allowed for targeted questioning to take place so that specific information could be elicited and then fed back so that pupils can expand on their answers.
- \* Going back over L1/2Cs to bring lesson full circle and understand where pupils' learning essentially is at.

Date: 18/5/23

Thursday, Period 6

### Lesson Description

- (T) Weather
- (C) Features / Sustainable Homes
- (A) Home Creation, Discussion, Peer assessment

### Instruction

- Pupils were tasked with creating / designing a home for the future that will provide support for people from future features.
- \* Specific criteria and points to consider were presented to the pupils so that they had a checklist of things to include/consider.
- All points were discussed and examples of real-life constructions (such as the white houses of Southwark) were shown to stimulate new ideas.
- \* Pupils were given the option to work independently or in pairs, giving them some autonomy in their work.
- \* Once all points were covered, pupils were asked to give a list of five to gauge their confidence on the task ahead.

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