Praising the process: Can Effort-Graded Feedback Improve the Motivation, Engagement and Attainment of Students with the Formative Assessment Process?

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A Research & Development Project Submitted for the MSc Learning & Teaching 2016

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Praising the Process:

Can Effort-Graded Feedback Improve the Motivation, Engagement and Attainment of Students with the Formative Assessment Process?

Research and development study submitted to the University of Oxford in part-fulfilment of the MSC Learning and Teaching.

Abstract

This study built on a previous piece of my research, which found that student perceptions of the efficacy of feedback do not always match what both teachers and the literature might expect. A new model of written feedback was implemented in the classroom that praises the process of learning as opposed to the outcome.

2 collaborating teachers implemented a criteria-driven effort grade feedback intervention in conjunction with standard practice of constructive written comments. 50 year-10 students from 2 mixed attainment science sets were studied in terms of their motivation for learning, engagement with the feedback process and resulting attainment before and after intervention. The effectiveness of the intervention was assessed using action research methodology in two cycles gathering evidence from the collaborating teacher and students using interviews and questionnaires.

Analysis of the data showed that reactions to the intervention from both teachers and students were positive. Students initially struggled to identify and reflect on their own effort, often over-estimating it when compared to teacher assessment. Throughout the intervention, however, refinements to the effort-criteria, based on evidence gathered in the action research process, enabled increased student awareness of effort and ability to apply consistent grading. Motivation to learn improved and homework completion rates increased from 35% to 90%. Students showed better engagement with the feedback process and increased reflection and utilisation of written comments. A marginal increase in attainment was noted, though the limitations in using this as a measure with a small sample and short duration are discussed.

Contemporary educational research and implications for future practice are discussed; wider-use of effort-grading in feedback is indicated to verify findings in different subject areas. Teacher collaboration is crucial in achieving this and the practicalities of larger-scale roll-out are considered.

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1.0 Introduction and Rationale

The practice and benefits of written feedback have long been recognised in contemporary pedagogy. It has become an expected part of the practitioner's daily role, continuing the teaching and learning process beyond the constraints of the classroom. Of an average 57.7 hours worked per week, teachers in secondary school may expect to spend one-third of this time in instruction of students, with the remainder involved in the planning and marking of work (Department for Education (DfE), 2014; Paton, 2014).

A considerable focus of research in education has been given to the topic of written feedback in recent years. Perhaps most seminal and influential amongst this research is the work of Black and Wiliam (1998) which introduced a new model of formative assessment that separated historical practices of grading and feedback. This has all supported the delivery of feedback to students that is influential on academic progress (Education Endowment Fund (EEF) (2015). The centrality of this to teaching has since been cemented following the publication of an Office for Standards in Education (OFSTED) case-study of high-quality practice in action, making recommendations to schools and going some way to define the facets considered desirable (OFSTED, 2011). This was later formalised as a focus for inspection (OFSTED, 2014) and was specifically noted by Sir Michael Wilshaw in an introductory speech to new guidance:

"It doesn't take long to check whether books are graffiti free and well-marked…"

(Wilshaw, 2014 pp.5)

It is perhaps unsurprising then that schools have placed increasing focus on marking and feedback policies in recent years. Teachers are encouraged to provide constructive comments to students on work that are specific, timely and target-focused. This has become a significant concern of teachers to ensure that their practice is maximally benefitting students.

However, the potential benefits of feedback are rarely replicated in the classroom and there is a dearth of research that investigates the way that recommendations might apply to practice. Teaching that attempts to adapt and apply literature recommendations for effective feedback are not always successful and constraints of time, expertise of teachers and suitability of feedback methods are common problems (Hattie and Timperley, 2007; Lassonde, 2008). The findings of literature can, in themselves, be conflicting and rapidly changing. This leads to incorrect interpretation and a wide variety in practice. Furthermore, students do not always fully engage with the formative assessment process, further impacting on the success of interventions (Shute, 2008).

As a secondary teacher in an academy actively seeking to improve pedagogy and student outcomes, written feedback is of great importance to my daily teaching practice. However, I have witnessed the efforts that are put into providing effective feedback and the challenges that are faced in converting this to meaningful progress. Conflicting priorities often jeopardise these efforts, where ensuring attainment in statutory exams

often diverts teacher focus from the feedback process. Previous studies that have sought to reconcile demands on teacher time with effective standards have not been able to rectify this challenge (Butt and Lance, 2005). Furthermore, student books reveal that, even when given regularly and in-line with research recommendations, feedback is not always acted upon or influential in learning. In a previous research study, I discovered that student perceptions within my school are often out-of-line with teacher expectations and a chasm has begun to extend between what we think is useful to students and where benefit is really gleaned (Bayliss, 2015). Finding a way to support students through diagnostic feedback in a way that is sustainable, effective and promoting of engagement, motivation and attainment is therefore highly pertinent.

Within this action research project, I will investigate the issues that still surround written feedback in education and introduce a method for giving feedback, focused on student effort, that attempts to unite these sometimes differing requirements of teachers and students through praising the process of learning as opposed to the products of it.

2.0 Literature Review

2.1 Background

Written feedback, as formative assessment, offers the learner the individualised attention that is not often feasible in a classroom setting and can be well defined as

“information communicated to the learner that is intended to modify his or her thinking or behavior for the purpose of improving learning (Havnes et al, 2012).

The concept of formative assessment for reviewing and guiding learning is not a new one; Socrates is believed to have been an early practitioner, using probing questions to assess student understanding and use it to enable improvement on their own weaknesses (Greenstein, 2010). Whilst Socratic principles have long been used by teachers, the term ‘formative feedback’ in contemporary practice can been traced to Scriven (1967; cited in Shufflebeam and Coryn, 2014) in his distinction between formative and summative assessment and its impact of learning. This was later applied more directly to pedagogy by Bloom (1971; cited in Shufflebeam and Coryn, 2014) who laid out a framework for linking learning to objectives for reaching the next level of mastery.

In the decades following, teacher provision of written feedback to students has developed into a significant branch of pedagogy. It has seen a dramatic increase in attention from researchers and practitioners alike. Such research has heralded the benefits of written feedback and it is now considered a crucial facet for not only ensuring educational progress but building relationships between teacher and learner, and instilling motivation and engagement in students (Hyland and Hyland, 2001; Shute, 2008). In a 2007 meta-analysis of evidence linked to improving educational outcomes it was found that, of all the interventions considered, written feedback had the greatest

effect on progress (0.79). This was compared to other factors such as homework (0.41) and smaller class sizes (0.12) (Hattie and Timperley, 2007).

Feedback has evolved alongside the shifting theories that underpin pedagogy; historically, a reliance on quantitative grades and scores has been replaced with qualitative, objective-based methods that more closely represent the constructivist theory of learning towards which contemporary education has shifted (Bruno and Santos, 2011). Under this principle, learners are seen as active participants in the building of understanding. It is when interactions between innate ideas and experiences conflict that the learner is forced to construct a revised idea of truth; they use feedback to support ongoing progress (Leonard, 2002).

Despite the breadth of research in support of high quality written feedback, and the growing pressure within school policies to use it regularly, there is evidence that it is not applied fully or consistently in teaching practice, such that students do not see the full potential benefit (Havnes et al, 2012). Lassonde (2008) stated that despite tremendous potential for boosting progress, teachers find feedback time-consuming – especially when inexperienced or new to teaching – and this leads to inefficient, irregular and ineffective feedback models being used. This is supported by Ferris (2011) who argues that teachers often apply feedback according to their own intuition or the expectations of the students that they teach. This is caused by frustration at the lack of concrete empirical support provided for a clear and practical method of written feedback.

Evidence of these conflicts can be found when considering the available research on the use of positive comments in feedback; Shute (2008) warns against using positive comments in favour of more targets for improvement, whilst Voerman et al (2012) state that making feedback overly negative affects a child's willingness to engage with and remember such feedback. Voerman et al (2012) instead recommend a minimum positive to negative comment ratio of 3:1, not exceeding 11:1. However, when reviewing the evidence for their findings, Voerman et al (2012) themselves found that of 78 teachers in the eight Dutch secondary schools studied, only 44% used a ratio that came close to this. They concluded, that whilst there is some support for a 3:1 ratio, further refinement is needed to make a feasible model.

This ultimately results in an inconsistent approach that is unsupported by empirical evidence. Ferris (2011) focused on the use of corrective written feedback for students who write in a second language, and not at written feedback more broadly. This challenges the direct applicability of their findings to general pedagogy, however highlights the important underlying conflicts in the research body that do provide relevant insight. Indeed, these findings are echoed by Emmet et al (2009) in their trial of a 'fast-feedback' model in science classrooms. They found that feedback, in the forms suggested by the evidence base, put considerable demands on the teacher; despite being appreciated by practitioners and students alike, feedback was not always applied as had been intended. Whilst the sample used by Emmet et al (2009) is again limited when attempting to generalise their findings, it is unlikely that the challenges faced by science teachers are significantly different from other practitioners.

When considering the reasons behind this apparent conflict and difficulty in applying feedback practically, Brown (2012) – in a review of feedback efficacy more generally - states that it is debate in the literature that ultimately leads to the conflict and lack of clarity. Inconsistent methodologies and difficulties in conducting controlled classroom studies ultimately affects the reliability and comparability of research in the field (Brown, 2012).

There are, however, facets of high quality and effective feedback that are consistently noted in the evidence base. In their seminal book, Black and Wiliam (1998) identified that despite efforts, policy reform and teacher education in previous decades on the topic of written feedback, attempts were failing. They believed that demystifying the processes of good teachers – termed looking inside the 'Black Box' – would provide insight into how to raise standards nationally. Black and Wiliam (1998) laid out both a strategy and rationale for effective classroom feedback and attempted to bring together the strongest of the available evidence base. Primarily, they argued that grades should be avoided in favor of constructive, qualitative, written comments. These comments should outline both the positives and negatives of a piece of work and, crucially, provide some scaffolded target for a student to directly improve their work. Black and Wiliam (1998) argued that this would enable the focus of feedback to be removed from the individual and put onto the task. If too focused on the individual, feedback becomes tied to self-esteem and image at the expense of educational progress. This is supported by a large meta-analysis conducted by Kluger and DeNisi (1996). They stated that task-

focused and individual-focused feedback should be seen at opposite ends of a continuum; when feedback becomes more individual-focused, its efficacy decreases. However, in response to criticism on this point – that effective learning relationships cannot be built on a depersonalised approach to feedback (Brookhart, 2007), Kluger and DeNisi conceded that a fine line must be trodden to ensure that both progress and relationships are maintained with students.

In a literature review by Shute (2008), a list was provided with strategies that were consistently linked to high-quality feedback. Key amongst these was the need for feedback to be both specific and linked to clear learning outcomes. Teachers must decide on the criteria that they will assess work against, and these should be reflected in the comments that are provided to students. This gives a clear idea of what needs to be done to improve, and limits feedback to one or two clear targets that can be understood and acted upon. Failure to do this fosters frustrations and a view that feedback is useless; Bayliss (2015) found that, in an action research study using interviews to investigate student perceptions of feedback, students felt that when their comments were broad and too numerous, they could not access what needed to be done to progress. Although small in scale and therefore lacking generalisability to the target sample of secondary schools nationally, there is support for this idea from a larger base of evidence (Williams, 1997; Brookhart, 2007). The results found by Bayliss (2015) echo those of Phye and Sanders (1994), in their study using a sample of 75 undergraduate psychology students. They found that the intervention of specific feedback did more to promote progress than more general comments for the majority of

tasks; transfer-tasks, where students are moving on to a new skill or subject, may not relate so clearly to specific learning outcomes. This study's choice of sample is different to a secondary school cohort and there are potential confounding variables of educational history and ability to interpret and use feedback effectively that challenge its application to other educational settings.

Shute (2008) also advocates feedback comments that are clear and succinct. It is central to the ability of students to interpret feedback, and their motivation to read and act upon it, that makes it useful for progress. Giving comments in a format where students can distinguish between praise and targets is important when expecting feedback to be internalised and viewed as a worthwhile pursuit (Bayliss, 2015). For teachers, being aware of your students' individual needs, motivations and level of comprehension is vital when tailoring goals and comments to them, if feedback is to be seen as beneficial (Bransford, Brown and Cocking, 2000).

Finally, feedback timing is also an important factor for consideration; Brookhart (2007) states that the choice of when and how often to give feedback is dependent on the task. For example, if a teacher is assessing the understanding of new facts, immediate feedback enables misconceptions to be highlighted and treated. If more complex skills are being learnt, feedback is likely to be delayed until a point where the student has had adequate chance to demonstrate their skill. The risk here is that in subjects that are more heavily dependent on immediate feedback to assess understanding of facts,

grades and quantitative feedback is likely to be more broadly used as an alternative to written comments. This is particularly true in subjects such as mathematics and science. To investigate this effect, Bruno and Santos (2010) studied 8th grade students in science lessons in a Portuguese school. Case studies and interviews were used to assess teacher practices and student perceptions. They found that there was an over-reliance on grades in order to provide a clear, measurable idea of content-mastery. Shute (2008) concluded that, whilst teachers must place greater emphasis on constructive, written feedback as part of their formative assessment, there is no conflict in using both delayed and immediate timings for such feedback. Teachers must be aware of the content and student needs in order to decide which is most appropriate as part of their pedagogy.

In recent decades there has been a growing discord in the giving of grades as a method of feedback; Butler and Nisan (1986) stated that grades are detrimental to effective feedback as, when they are given, students ignore any further written comments and do not consider specific targets needed for progress. Black and Wiliam (1998) did much to convey this concept to teachers and change perceptions of grading as a negative intervention. They argued that feedback should be about an individual's own work and not encourage comparisons to be drawn between others in the classroom. Ignoring this would create a climate of success or failure and reduce motivation to improve; feedback that is ego-involving is likely to confirm a child's impression of their own ability and lends to a view of intelligence as innate, as opposed to plastic.

In an educational system constructed around progress measures, graded school reports and league tables, this separation was perhaps incongruous. However, Black and Wiliam (1998) reasoned that with time, the benefit of constructive feedback would be greater that seen with grading. There is now a large body of evidence to support the view that qualitative feedback is beneficial over quantitative.

What Black and Wiliam (1998) saw as more important and explanatory in formative assessment, is a student's effort in their work. It is argued that drawing attention away from a measure that implies intelligence (often perceived as fixed) and towards effort (more widely considered plastic) benefits motivation to improve, task enjoyment and persistence (Black and Wiliam, 1998; Mueller and Dweck, 1998). If teachers praise the process, as opposed to the individual, feedback can have greater impact of progress. Brookhart (2007), in her review of literature on effective feedback in secondary schools, goes further to state that teachers must give the impression to students that *if* they improve their effort, their work *will* improve.

To further understand the evidence base for the issues specifically surrounding effort-graded feedback, the review of literature will now be considered in line with the key research questions.

2.2 Motivation

The issues of motivation, both in terms of student motivation to engage with feedback and the provision of feedback that preserves and maximises motivation for learning, are central to the consideration of effective written feedback. Dweck and Elliot (2005) distinguish between two forms of motivation common amongst individuals; intrinsic motivation being the innate drive for self-improvement, not dependent on external reward or sanction. Extrinsically motivated individuals, however, act only to receive reward or recognition. It is generally accepted that such extrinsic motivation is less preferable than intrinsic and less conducive to meaningful educational progress. Becker et al (2010) performed a longitudinal study of 740 elementary school students in Berlin from a mix of social backgrounds. They were followed as they progressed from Grade 3 to Grade 6, and reading literacy levels measured in response to intrinsic and extrinsic motivators. Extrinsic motivation was measured in participants in terms of the level of parental encouragement. They found that, at Grade 6, extrinsic motivation and level of reading literacy were negatively correlated.

Whilst this study reveals a trend in progress in reading ability when extrinsic motivation at home is a factor, there are issues that challenge its validity. I would pose that parental encouragement is an intangible reward for children that may not, in isolation, significantly overcome their innate intrinsic motivation. Tangible rewards are accepted as being of material or monetary value to an individual (Owen, 2003). The results seen may not, therefore, reflect extrinsic motivation alone. In addition, Becker et al (2010)

state that 37% of students sampled spoke more than one language routinely at home. The breadth of vocabulary, linguistic stimulation and level of literacy of an individual are likely to be linked, such that those who encounter other languages at home and receive early emphasis on the importance of literacy may be more intrinsically motivated to improve their reading level, regardless of extrinsic motivators. This may be a confounding variable that ultimately affects the validity of results seen.

Deci (1971) identified that an extrinsic motivator, even when applied to an intrinsically motivated individual, has debilitating effects on motivation to perform even inherently interesting tasks. Deci (1971) provided a tangible reward in the form of money to motivate college students and found that they were less likely to perform the interesting tasks when they knew that external reward could be given, and wasn't being offered. Despite the challenge to generalisability to a secondary school group, these results have been echoed in numerous studies. Deci et al (1999) conducted a meta-analysis of 128 educational studies in the field of extrinsic reward as a modifier for intrinsically motivated people. They considered studies that provided a tangible reward to individuals. They found that extrinsic reward significantly undermined free-choice intrinsic motivation, regardless of whether the reward was engagement-contingent, completion-contingent or performance-contingent. This supports the idea that, as educators, providing an extrinsic reward to students is likely to be of detriment to their progress.

Dweck (2006) makes a further distinction between students and their mindset, in terms of how they regard intelligence as either fixed or plastic. Those termed ‘fixed-IQ’ theorists believe that their intelligence and ability are innate and are therefore working within the constraints of their own intelligence. ‘Untapped-potential’ theorists believe that intelligence is a result of learning, requiring time and effort to achieve. Dweck (2006) suggests that students who are fixed-IQ theorists would see quantitative grades in their written feedback as confirmation of their intelligence and not as a motivator to improve, and therefore this would be detrimental. This is an idea supported by Tanner and Jones (2005) in what they called ‘ego-involving’ (pp.65) feedback; it may promote self-image but limit a child’s motivation to improve further. Black (1998) continued this idea further with what he termed ‘helpless children’ – those individuals that are of a fixed-mindset who believe they are failing and become hopeless when they receive a quantitative grade.

Support for this idea was found in a seminal study by Page (1958) which examined the effect of grades-only versus grade and teacher comment as feedback. Page found that when teachers take time to write comments and give guidance, there is a… ‘measurable and potent effect upon student effort, attention and attitude…’ (pp.180-181). Whilst this study can be criticised in terms of the contemporariness of its findings, it made a finding that helped unite pedagogy and motivational theory. In an attempt to replicate these findings, Stewart and White (1976) presented the results of their own study and reviewed the findings of 12 others. They found a less confident correlation

between motivation and feedback and noted that the findings of Page may depend more on the learning context and content of teacher comments.

However, in a more recent study, Cross and Cross (1980) did find that comments produced a higher degree of internalisation of feedback than grades alone. Furthermore, Butler and Nisan (1986) studied 261 6th grade students in American schools. Students were split into three intervention groups, receiving different forms of written feedback. Levels of motivation were assessed and differences were noted in the levels of intrinsically and extrinsically motivated students. Those who received only a grade failed to progress adequately, whereas those who received a constructive comment became more intrinsically motivated and showed better progress. Whilst there are cultural limitations when generalising these findings to schools in the United Kingdom, they do demonstrate how motivation and written feedback can be inextricably linked. Kluger and DeNisi (1996) go a step further in their meta-analysis of research studies centered around what they term the 'Law of Effect'. This is where a positive performance is associated with effort and a negative performance with punishment. They found that written feedback in the classroom is all-too-often tied with extrinsic motivation, which fosters a fixed-mindset in students and reduces engagement with the feedback process. They conclude that it is better to give process-based comments and avoid feedback focused on the individual – including labels such as grades.

Despite evidence that motivation is damaged by graded feedback, praise of effort has been shown to also be compatible with an intrinsically motivated student. In a study by Mueller and Dweck (1998), 128 5th grade students, ranging from 10-12 years of age, in American schools were sampled. 49% attended a school in a small town whilst 51% attended one of two schools in a larger city. Students were asked to attempt a set of problems and were then given feedback that was either based on their ability or on the effort made. Their motivation was assessed through small group interviews and scored on a Likert scale. Those praised for effort reported caring more about learning goals and showed greater persistence post-intervention. Furthermore, the praise given appeared to impact the child's own belief of intelligence as fixed or plastic; those praised for intelligence were more likely to see intelligence as innate and unchangeable.

Similar results were found in a more contemporary study by Harks et al (2014). It was found that process-oriented feedback was perceived as more useful by the 146, 14-17-year-old students sampled. There was also a correlation noted in process-oriented feedback and level of achievement. Whilst the classroom context is unclear from these studies, in terms of learning dynamic and setting, it is conceivable that such effects are more marked in mixed-ability groups where students are more likely to compare themselves to others and judge their own intelligence. As Natriello (1987) concludes in his literature review of research into student evaluation, where teachers praise ability alone, there is a greater resulting spread of grades between individuals in the classroom and greater judgement between students as to their ability level.

2.3 Engagement

Fostering strong and positive attitudes towards the topic under study is long recognised by educators to be crucial for engagement and progress (Kahn and Weiss, 1973). A student's resulting engagement with feedback is crucial to internalisation and effective use of formative assessment (Cross and Cross, 1980). Where students are poorly engaged in the feedback process, targets for improvement are not acted upon and the potential impact on attainment is not realised. Where feedback is overly negative or damaging to motivation, not only the willingness of individuals to heed advice reduces but also the likelihood of them remembering the feedback given (Baumeister and Cairns, 1992, cited in Voerman et al, 2012; Harks et al, 2014).

When investigating student perceptions of feedback in a cohort of secondary school students, Bayliss (2015) found that a contributor to reduced engagement with the feedback process was a perceived lack of continuity; teachers would set targets that would not be returned to or re-evaluated. Students reported difficulty in measuring their own progress effectively as a result. Lack of engagement and interest in the feedback process was directly attributed to this lack of ability to self-regulate and self-evaluate progress. Students in the sample studied stated a preference for grades as a solution to this problem, stating that it allows the opportunity to judge progress over time.

Such findings are supported by McMillan (1977) in his study on university level students. McMillan allocated four classes to either high or low effort assignments, receiving high-praise or no-praise feedback. It was found that students receiving high effort praise developed significantly more positive attitudes to both subject and the feedback process and showed higher attainment. This adds weight to the notion that not only is engagement with the feedback process linked to higher attainment, but that it is contingent on the form of feedback given and, specifically, praise of effort.

2.4 Attainment

The ultimate aim of feedback is to enable student attainment (Black and Wiliam, 1998). The evidence base has consistently commented upon the link between high quality feedback and improved attainment. Whilst this is difficult to measure in educational settings – excluding other variables from the measurement of progress, such as teacher differences – there does appear to be correlation between constructive feedback that praises effort and better attainment.

In a series of two intervention studies by Lam et al (2008), the effect of praise for effort on student motivation and learning were explored. They argued that students typically possess one of two views of the relationship between effort and intelligence; firstly, that effort and intelligence are inversely related, such that the lower one's ability, the more effort must be put in to make up for it. Secondly, that effort and attainment are positively

related. In this case, students believe that when they work harder, they achieve better. Lam et al (2008) speculate that if a child follows the latter, they will be encouraged by effort-based feedback and feel empowered to achieve. In study one, 34 7th grade students in a Hong Kong secondary school, located in a middle-lower class neighbourhood, were observed in lessons and interviewed. They found that when the classroom environment fostered the positive rule, student motivation and attainment increased. Study two looked at 45 7th grade students in the same school, and revealed that this environment can be manipulated by the teacher stance in their relationships, conversations and feedback with students. Thus, they concluded that not only is effort a useful component of feedback, but that a climate for effort can be fostered easily.

Whilst Lam et al's (2008) findings are supported by the surrounding evidence base, caution must be exercised when generalising these findings to the education system in the United Kingdom; the educational climate and baseline levels of student motivation in Hong Kong may differ. Furthermore, consideration of a specific socioeconomic group may also limit the validity of these claims in other groups; factors of upbringing, resilience and parental support may have an effect.

There is a dearth of research that looks into the differences between socioeconomic groups, their individual needs in terms of written feedback and the effect that this has on attainment. There are significant differences, however, between the attainment of certain groups; students classified as Pupil Premium are perhaps most notable.

Pupil Premium refers to a student who has a disadvantaged background that puts them at higher risk of poor engagement with school and underachievement (DfE, 2015). Schools are allocated additional funding to support these individual educational needs and assessed on these pupil's progress in line with other students in a cohort. OFSTED have increased their focus in recent years in their assessment of school standards on those students eligible for Pupil Premium grants. Schools are assessed both in the way that they use funding, and on the '…impact of what a school is doing to narrow any gaps in progress and attainment between disadvantaged and non-disadvantaged pupils.' (OFSTED, 2015).

The EEF (2015) reviews research evidence to interpret and prioritise interventions that are shown to have the greatest impact on such students. Of these interventions, high-quality feedback is shown to have the greatest impact, with a potential increase of eight months of progress for each student – echoing the findings of Hattie and Timperley (2007).

Despite this, there is a relative dearth of research that has looked into the facets of feedback that are of particular benefit to disadvantaged students. Bayliss (2015) noted that students identified as Pupil Premium within the research sample were more likely to have a preference for grades than comments alone. On further questioning, students reported a significant social factor in the use of grading; grades were seen as having

particular importance to the child and their family. This was less notable in those students who were non-disadvantaged.

In a study of students in Chinese schools by Yang (2007), the expectations of a family placed on individuals throughout their education was investigated. It was found that parents of students from disadvantaged backgrounds had aspirations that were higher than parents of non-disadvantaged children, for them to achieve more highly than they did, and receive more social mobility as a result.

Chen (2005) went further and looked at the reasoning behind this trend – assessing the impact of the three capitals; educational, social and cultural. Chen noted that those parents of non-disadvantaged children typically had access to a larger educational, social and cultural capital resource than those parents of disadvantaged children. Whilst it is likely that educational capital is accessible to all – albeit with some differences in fee-paying and non-fee-paying schools – they are less likely to access social and cultural capital. There is a greater reliance on high qualifications for securing social mobility and accessing opportunities for employment for these students.

Whilst this study does offer insight into the individual variations between desire for more academic and graded feedback in those disadvantaged students, the validity of the study can be criticised in the way distinctions were made between non-disadvantaged and disadvantaged. Chen (2005) relied on the employment of fathers to guide stratification of participants; mothers were not accounted for and this may skew the

samples studied. It may also be questioned whether findings from students in Chinese culture and education can be reliably generalised to the United Kingdom; family values are likely to be different and this could affect conclusions drawn.

Swinton (2010) goes some way to looking at the cross-cultural transferability of these findings in his study of an American college. The college serves predominantly disadvantaged students within either vulnerable racial groups or from a background of poor parental education. He reports on a new college policy to provide students, aged 18 years and above, with an effort grade as part of their feedback from professors in an attempt to narrow national attainment gaps. Swinton attempted to control confounding variables such as professor-student bias and statistically analysed the changes in knowledge grades over a 2-year period. Swinton concluded that the introduction of effort grades had had a direct impact on the overall attainment grades of students.

Whilst I would challenge the level of confidence that can be placed on this data to make a causal statement between effort grading and attainment, it does offer support that extrapolation of culturally specific findings is possible. There are certainly implications that can be drawn regarding the importance of grades as motivators for disadvantaged students.

2.5 Summary of Evidence

The evidence base makes a clear case for the use of high-quality written feedback by teachers in order to support academic progress. Considerable research has taken place in the field and there is a building consensus as to what makes feedback 'effective'. Feedback must be task-focused as opposed to being individual-focused – preserving student self-esteem and promoting the image of intelligence as plastic (Kluger and DeNisi, 1996; Voerman et al, 2012). Feedback should be specific and mapped to learning outcomes so that students can interpret what they need to do to improve (Phye and Sanders, 1994; Shute, 2008). Finally, feedback must be delivered in a timely manner; it is inappropriate to provide immediate feedback for skill acquisition as is it to give delayed feedback to check and modify the learning of new facts (Chin, 2006; Brookhart, 2007).

Teachers must balance the delivery of feedback to ensure no compromise to motivation, engagement or attainment of students. Perhaps the most controversial of these suggestions is the avoidance of using grades in written feedback. Although widely accepted following the work of Black and Wiliam (1998), I would challenge that the use of grades is not incompatible with high-quality feedback and may confer benefits to students of a disadvantaged background, for whom educational capital and ability to judge their own progress is of particular importance. I would suggest that it is impractical to expect students to separate this from their everyday classroom experiences in an

education system so firmly built upon quantitative measures of progress. It is from this concept that I will formulate my key research questions for this study:

- Does effort-graded feedback enhance motivation for learning?
- Can the use of effort grades enhance engagement with the formative assessment process?
- Does effort-graded feedback benefit attainment?

3.0 Methodology

In order to investigate motivation, engagement and attainment as relatively abstract concepts, a mixed-methodology approach was utilised to best assess the effectiveness of the intervention. Student questionnaires were supported with student interviews and combined with teacher discussions, observations and attainment data.

3.1 Sample demographics

50 students were selected to participate in the intervention from the year-10 cohort of a secondary, co-educational and non-selective school serving a predominantly disadvantaged community. Of the sample, 23 were female and 27 male. At the start of intervention, the oldest student was 15 years and 3 months and the youngest 14 years and 8 months. All students were of mixed academic attainment and historically were

highly demotivated, not only in science but across the curriculum. This specifically manifests in the classroom as low effort, limited animated discussion surrounding work and poor homework record.

The sample group were split into two classes for science lessons – taught by two separate teachers (herein referred to as T1 and T2) for two hours per week. T1 is a relatively newly-qualified teacher with 2 years of experience post-qualification. T2 is an experienced teacher with over 10 years of teaching practice.

3.2 Questionnaire Methodology

A paper-based questionnaire tool was used with the student sample both pre and post-intervention. A mixture of open and closed-ended questions were structured around Likert scale responses to allow for comparison and for responses to be justified and explored more deeply (appendix 4). All questions were mapped to the key research focuses (figure 1).

Likert scales allow for responses to be translated into a numerical figure. This enables the researcher to assess both degree of opinion and compare changes in mean opinion over time (Mangal and Mangal, 2013). Compared to other scales available for questionnaire methodologies, such as the Thurstone scale, Likert scales have a high reliability and this is in part due to the lack of neutral response options (Kumar, 2014). Confusion can be created when a middle, non-directional option such as ‘sometimes’ or

‘unsure’ is available. This may ultimately affect the reliability of the results and, as such, a 4-point Likert scale was selected for use. Attitudinal values were selected that were distinct, non-overlapping and of equal interval to ensure that validity of data analysis remains high.

Research Question	Questionnaire Question
Does effort-graded feedback enhance motivation for learning?	5,6
Does effort-graded feedback enhance engagement with formative assessment?	3,4,5,6
Does effort-graded feedback benefit attainment?	1,2,3,4

Figure 1: Questionnaire questions mapped to key research focus.

Closed-ended questions offer respondents a limited range of options for answers. This enables rapid and objective analysis free from subjectivity bias. Bias may be introduced where the researcher interprets responses in line with their own personal views or preference – beyond that intended by the respondent (Mitchell and Jolley, 2013). This is a particular risk when surveying students; open-ended responses are likely to be affected by vocabulary and communication issues. Researchers must then interpret this, increasing the likelihood of bias. Where researchers are significantly invested in research, or have a weight of evidence to support a finding, they are more likely to view subsequent results as consistent with this (Mitchell and Jolley, 2013). Any signaling of

the interviewer to what they deem to be a ‘correct’ answer, may influence subsequent answers given (De Leeuw, 1992). By using multiple-choice or scaled questions in this tool, respondents were confined to a uniform set of options which can be interpreted without bias. Open-ended questions were then used to allow elaboration and justification of answers.

Open-ended questions allow depth and richness of opinions to be expressed and provide researchers with the reasoning. They provide valuable information where pre-determining a narrow set of responses would not be possible. As Brace (2008) states, it is highly likely that respondents will be able to provide insight into the topic being studied that the researcher has not considered. To stifle this by using only closed-ended questions would introduce further bias, whereby the response options are only those that can be conceived by the researcher. The validity of such findings would be difficult to defend as a comprehensive understanding of the research field (McBurney and White, 2009).

However, open-ended questions are slower to administer and interpret; written answers must be coded and collated to establish opinion (Brace, 2008). Participants are also less likely to complete these more time-consuming and effort-intensive fields, leaving researchers with an incomplete data set. As a source of bias, this is significant; participants that do respond are likely to be those that have strong opinions on the topic, or else be generally more conscientious. To survey only these individuals would give a skewed perspective on the issue under study (Lodico et al, 2010). This is particularly

true in this educational research, whereby the conscientiousness of students may be a direct factor in whether they do engage with written feedback. In order to address this, respondents were given a set time in which to complete the tool, within lesson time to minimise incentive for early-finishers.

Following intervention, the same questionnaire tool was re-utilised to enable comparison of opinion and to inform the decision of whether effort-graded feedback was beneficial when compared to standard comment-only feedback.

3.3 Interview Methodology

In order to obtain depth of answers and investigate response trends in questionnaires, interviews were conducted using 6 students from the year-10 sample, following both pre and post-intervention questionnaires.

Within the sample group, a mix of students were selected to include two higher, two middle and two lower academic attainers. One of each attainment group were selected from each class to ensure a representative sample. Interviews were conducted as a group of 6 to minimise intimidation. As Aubel (1994) states, the group methodology enables participants to gain confidence and respond more spontaneously. This is ultimately beneficial for the validity of findings. The larger interview group also allows for snow-balling of ideas and concepts, whereby ideas can be developed by others in the group to better encourage discussion, extract opinion and identify new issues (Mitchell

and Jolley, 2013). In order to standardise question delivery between all participants, a 5 question tool was pre-scripted and agreed between participating teachers and one researcher, who also participated as T2, conducted all interviews. Where several researchers are used and questions are not scripted, delivery may vary; participants may interpret questions differently based on pitch, tone and wording. This may lead to further subjectivity bias, ultimately affecting the validity of results (De Leeuw, 1992).

However, where the interviewer is known to participants, an aspect of social-desirability bias may be introduced such that participants may only respond in a way that they believe shows them positively, or is deemed to be preferred by the researcher. It is a risk that where the teacher is also interviewer, students may be unwilling to be overly critical in their answers (Mitchell and Jolley, 2013). To further overcome this, concrete examples were encouraged and the interviewer would prompt for examples to support statements. This helped to ensure clarity of meaning and that the respondent could evidence their contribution. All questions were open-ended and responses were audio-recorded and later transcribed (appendix 5, 6).

During the pre-intervention questionnaire, significant issues arose surrounding motivation to respond to feedback, continuity of targets and meaningfulness of written feedback. Therefore, interview questions were included to further elicit the reasons behind this. All questions were mapped to the research focus (figure 2).

Research Question	Focus	Interview Question
Does effort-graded feedback enhance motivation for learning?	Why does feedback affect motivation?	1,3
Does effort-graded feedback enhance engagement with formative assessment?	Would reviewing old targets improve engagement in the feedback process?	4
Does effort-graded feedback benefit attainment?	Do grades in feedback benefit progress?	2,5

Figure 2: Pre-intervention interview questions mapped to key trends in questionnaire data.

Post-intervention, interviews were conducted to again elicit further detail on issues raised in the student questionnaire (appendix 6). The same 6 students were sampled in a group interview approach. In using the same sample, responses could be compared and shifts in attitude, motivation and perception of feedback accurately assessed. Questions were again pre-determined and mapped to the areas of focus arising from questionnaires (figure 3).

Research Question	Focus	Interview Question
Does effort-graded feedback enhance motivation for learning?	How has effort-grading affect motivation?	3
Does effort-graded feedback enhance engagement with formative assessment?	Has effort-grading affecting reading and reflection on feedback?	4,5
Does effort-graded feedback benefit attainment?	How have effort-grades affected progress?	1,2

Figure 3: Post-intervention interview questions mapped to key trends in questionnaire data.

3.4 Teacher Diary and Discussion

During the intervention, collaborating teachers kept a diary of their observations of students. This provides additional evidence to inform the research focuses of motivation, engagement and attainment. Teachers recorded their assessment of how feedback is engaged with and its impact on learning and progress.

During informal discussions, both collaborating teachers reviewed these diaries to identify key findings and issues in the intervention. Discussions were audio recorded and transcribed in summary.

3.5 Attainment Data

The quantitative assessment of the impact of the intervention on attainment presents challenges to both evidence and ensure validity. As described by Midgley et al (2014), confounding variables in education may lead researchers to see 'spurious relationships as valid' (pp.187), for example, that effort-graded feedback is directly correlated to a shift in attainment. Such variables might include teaching style and quality, changing topics and the advancement of the academic year - where topics might be expected to have been revisited and revised.

However, attainment data may still be useful to represent changing trends in progress, when combined with additional data and applied judiciously. Here, pre-and post-intervention attainment data was collected for all student from termly assessment point reports to ensure accuracy and minimise strain on collaborating teachers. This focused on sub-level of progress throughout assessment points (AP) 1-3. This study was conducted following AP2 and prior to AP3. Therefore, AP3 data was used as the direct reference for attainment. In addition, historical data was accessed and collated for a comparable cohort of year 10, mixed-attainment students from the previous academic year to better compare trends in improvement and identify any significant changes with the current cohort.

3.6 Ethics

To ensure ethical practice according to British Educational Research Association (BERA) (2011) guidelines, CUREC (1a) approval was sought prior to beginning the research study (appendix 2). Under the modus operandi covering educational research, this study was deemed to be within the normal practice of teachers and as such did not require parental consent. Draft questionnaire and interview question schedules were provided for ethical approval and informed consent was sought from the Head teacher of the focus school (appendix 3).

In accordance with this, student questionnaires were conducted within science lessons and confined to a 10-minute period, to minimise loss of instruction time. Interviews were conducted outside of lesson time but again limited to 10 minutes per interview. Student consent was obtained for the audio recordings of interviews and all recordings destroyed after use. During transcription, pseudonyms were adopted to ensure anonymity and confidentiality of students and teachers. Work samples and attainment data were also anonymised and the right to withdraw as a participant was made clear to all students.

4.0 Teaching strategy

To both investigate the claims of Black and Wiliam (1998), that effort should form a central component of written feedback, and extend the findings of Bayliss (2015) that grades are detrimental to student motivation and progress, a feedback intervention was utilised that would deliver both an effort grade and constructive comment on student work.

The intervention was delivered in two cycles. During cycle 1, an effort-graded feedback sheet was designed and used over a 6-week period to provide feedback to students on assignments. As shown in figure 4, the tool was completed by each student upon completion of the assignment. Students would use a 6-point success criteria to assess their level of effort. Upon teacher marking, their own perspective on student effort would also be scored based on the same 6 criteria and a total effort grade assigned. Teachers would then write a comment based on the strength, improvement and student response (SIR) format.

Assessment criteria were selected as common to all assignment requirements within science. Effort would be judged based on a student's completion of work both on time and to a high standard. Use of key scientific terms, clear presentation and evidence of further reading was agreed by participating teachers to be present in work that demonstrated high effort. To ensure consistency of feedback and allow comparison

between assessment points, it was important that the criteria be both specific yet transferable between any assignment given.

Effort Grade Feedback		
	Student ✓ ✗	Teacher ✓ ✗
1. Work completed on time.		
2. Attempted all parts of the task.		
3. Work includes key words, used appropriately.		
4. Presented clearly and neatly.		
5. Evidence of research or further reading.		
6. Self-corrected spelling, punctuation and grammar.		
Total:		
Strength: *Improvement:* *Response:*		

Figure 4: Effort-graded feedback proforma (version 1.0).

The SIR marking format was utilised as this approach was already employed by participating teachers prior to intervention and would minimise the effect of extraneous variables in the findings; where a new format were introduced, it would be difficult to produce valid claims that effort-grading was solely responsible for the effect on motivation, engagement and attainment. Written comments were maintained during the intervention as it was not the focus of the researchers to prove that effort-grading was better than standard intervention, but rather that it may have added benefit.

At the start of the intervention, the feedback process was explained to students and the importance of effort outlined. Students were tutored in the completion of the feedback sheet to ensure correct use.

Following submission, 10 minutes was allocated for student completion of the feedback sheet. Similarly, following teacher feedback, a further 10 minutes was allocated to allow full student response to their comment and target. This is necessary if students are to benefit from the process and to create a culture of progress (Tanner and Jones, 2005).

Allowing students to self-assess their work prior to teacher marking provides the opportunity to review their work and allows teachers to see and comment upon areas where perception of effort is inconsistent. Whilst self-assessment is a useful tool for involving students in the assessment process, the reliability of student grading can be variable, as found by Falchikov and Boud (1989) in their meta-analysis of studies into the accuracy of self-assessment. Whilst this study focused on self-assessment in higher education, and may not therefore be generalisable to secondary school students, it could be inferred that such students would present similar issues, not least through their lower experience of self-reflection. In using both teacher feedback after self-assessment and student response at the end of the feedback process, final comparisons of effort-grades can be used to moderate and train students on the components of a high-effort assignment. As Falchikov (1995) states, the student response time also enables peer-collaboration, which gives an opportunity to make comments and grades more comprehensible and provides a learning opportunity when reviewing the work of others.

Collaborating teachers agreed to meet at the end of the first cycle of intervention to review progress and discuss refinements to the feedback tool that may need to fed into a second research cycle.

5.0 Findings and Discussion

5.1 Pre-Intervention Findings

5.1.1 Questionnaires

Pre-intervention questionnaires were obtained from 50 students across the cohort. 3 questionnaire responses were excluded due to incomplete answers in at least 3 out of the 8 fields. Inclusion of such responses in the sample and subsequent data analysis could affect the validity of findings drawn (Athanasiou et al, 2010).

From the 47 responses accepted for data analysis, student demographics were captured to demonstrate the ability range of students and ensure no under-sampling (figure 5). Where a group is under-sampled, findings and conclusions may not be representative or generalisable to the target sample.

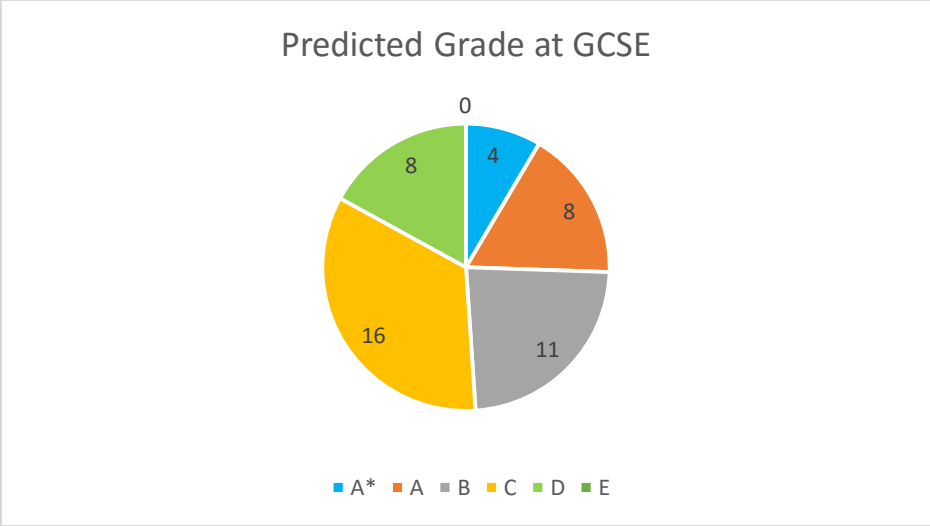


Figure 5: Student demographics from questionnaire by predicted grade at GCSE.

In response to question 1, pertaining to the most common form of feedback received by students, it was found that students most commonly received written comments only (n=35). This is compared with written feedback with a grade (n=8) and verbal feedback (n=4). The majority of students described receiving written comments as the largest single form of formative assessment. This is perhaps unsurprising when considering the increasing focus within schools to provide feedback that is constructive, recordable and visible (OFSTED, 2015).

Question 2 extended this, through a Likert-scale response, to identify frequency of feedback received where at least a partial component was a grade. No students reported that they always received a grade. However, only 2 students selected that they conversely never receive a grade. The mean Likert point selected was 2.2, revealing that the vast majority of students felt that they received a grade only rarely. This is consistent with the constructivist contemporary view of child development and

education; where children are able reflect on experience, they are able to remodel their understanding (Driver et al, 1994). Under this psychological theory, providing a grade to a child alone does not support reflection on mistakes or encourage rebuilding of knowledge to accommodate their new experience. Providing a diagnostic comment on strength and weakness, combined with a target for development, enables progress more effectively (Bruno and Santos, 2010).

Question 3 also utilised a Likert scale to elicit opinions regarding the usefulness of feedback in helping a student to progress. Perhaps surprisingly, the mean response was 2.9, revealing that, despite a significant tendency to respond as either 'mostly useful' or 'rarely useful', students felt that feedback was not always helpful in ensuring progress. In seeking qualification of this response through question 4, several key themes arose (figure 6). Of these themes, the most frequently reported was a lack of clarity to comments. As one student stated: *"I can't understand what the target means…".* Some students also felt that it was not always possible to assess their progress through written comments: *"[Teachers] don't go back and tell me if I've got better at something that was a target…I don't know if I've improved!".* However, some students felt that feedback was beneficial, allowed the identification of strengths and weaknesses and gave an opportunity to target problems; *"We get a strength and a weakness in the feedback so we know what went well and what we need to work on."*. This is consistent with the evidence base, which suggests that written feedback must be specific to the task being assessed and concise enough for a student to glean understanding (Shute, 2008). However, in the same literature review by Shute (2008), in

which a list of useful approaches for providing written feedback is presented, it is acknowledged that the idea of what constitutes specific practice is far from specific itself in the literature base; for practitioners trying to implement this in classroom practice, it is not surprising that it is not always successful.

Common Themes (in order of frequency)
Lack of clarity to written comments.
Targets not comparable or returned to and reviewed.
Allows identification of weaknesses.
Lack of personalisation in comments.
Gives an opportunity for improvement.

Figure 6: Themes of student responses – question 4

Question 5 returned to a Likert scale to assess opinion on the frequency with which students respond to feedback given by teachers. Consistent with this view of feedback as not always influential on progress, a mean response of 3.2 was found. This ostensibly shows that the majority of students reported that they respond to comments 'most of the time'. It is again clear that there was a split between responses and that this opinion was not secure, with many reporting that they rarely respond to written feedback. This may be consistent with the viewpoint that written comments are not

conducive to making progress; where students do not see the value in written feedback, they are less likely to engage with it.

This was expanded upon within question 6 and several common trends were again seen (figure 7). Interestingly, whilst the mean response showed that students do respond to written comments in the majority of instances, the motivation to do so was commonly reported as due to teacher requirement. One student commented that: *"We have to respond in lesson…we don't get to finish for break until we have all written our response".* This reveals a deeper issue of motivation. Whilst it may appear that students were generally motivated to respond to feedback, it is clear that in many justifications this was due to extrinsic factors. It was only as the third most common theme that students reported more intrinsic motivations. The issue of extrinsic motivation is well recognised in the literature base (Black and Wiliam, 1998; Dweck and Elliot, 2005). It is widely thought that by avoiding quantitative grades and focusing on diagnostic written comments, ego-involving factors can be avoided and students can be motivated intrinsically. However, students in this sample reveal that even with written comments, motivation to engage with the process remained extrinsic. Students did not progress solely due to their own drive for self-improvement.

Common Themes (in order of frequency)
Requirement to respond.
Student responses not valued or important.
Opportunity to improve on weaknesses.

Figure 7: Themes of student responses – question 6

Question 7 sought to explore further into the continuous nature of feedback and students were asked how often previous targets are reviewed, through a Likert scaling. There was a wide range of responses to this question which ranged from those who felt that they never have old targets reviewed to those that saw this as a frequent occurrence. Overall responses revealed a mean of 2.5, showing that previous targets are rarely returned to. No respondents identified that their targets were always returned to. In question 8, students were asked to elaborate on their perception of the importance of reviewing past targets. Notably, all responses were clear in giving at least one perceived benefit. Students consistently identified that judgement of their own progress was not possible unless they received teacher guidance on whether weaknesses had been corrected. As one student stated: *"…We would never know that we were getting better unless they [teacher] told us if we'd achieved the target".* This was extended by a different response which reported that: *"…this is why there's no point remembering [feedback] sometimes – it gets forgotten about as soon as you turn the page over.".*

It is central to the concept of effective feedback that a cycle is formed between the initial assessment of a skill, the learner's improvement and the subsequent reassessment and

target-setting (Kolb, 1984). Kolb constructed his own feedback loop to demonstrate this effect and the benefit of formative feedback (figure 8). Of particular relevance is the stage of active experimentation; students must have the opportunity to practice learning that has taken place from reflection and be able to feed this back into a further concrete experience. Such experience would be a similar task or opportunity to demonstrate understanding. However, where students are not given the opportunity to return to targets and reflect on their achievement, the cycle becomes broken and the formative assessment process fails.

The figure originally presented here cannot be made freely available via ORA because of copyright. The figure was sourced at Kolb, D. (1984) ***Experiential learning: experience as the source of learning and development***, New Jersey: Pearson Education

Figure 8 – Experiential learning cycle (Kolb, 1984).

A further complication here is the idea of transfer tasks; where a task is intended to summarise one topic before the move to a new one, students are unable to work on it adequately as it is not relevant to the next skills being developed (Phye and Sanders, 1994). Through their research into the benefits of specific or general feedback methods with undergraduate students, Phye and Sanders (1994) note that more general feedback may be the best way to ensure that these skills can still be exercised by

students. Although their research focused on a sample that it is not representative of secondary school students, it would seem logical that on such tasks an approach that assesses the process rather than the specific outcome may have benefits for student progress.

5.1.2 Interviews

Five respondents within the year 10 interview cohort reported a preference for grades as at least part of their written feedback. Whilst written comments were valued by students, the ability to self-assess progress was commonly described by students as a problem with comment-only feedback; *"I prefer to get a grade otherwise I don't really know how I'm really doing".* 1 student reported an initial preference for written comments. When probed for an example of where this works successfully, English was given as a subject where a comment is useful in promoting progress. However, the student went on to report that outside of this subject, comments lacked personalisation. This affected the perceived usefulness of such feedback. This was agreed upon by Finlay who stated that *"I know that grades are always about me and nobody else".* This supports the findings of the questionnaire where lack of personalisation was a key theme in why feedback did not always promote progress in the classroom.

To enable further elaboration on this point, students were next asked why they felt that feedback did not always enable progress. Five students reported that targets, and the extent to which they could be worked upon, was key to affecting progress. Similar to the

findings from the questionnaire, Michael stated that *"I don't always know what the target means or how to do it better"*, whilst Abdullah extended this to add that the frequently changing nature of targets made working on a set task difficult. With further prompting as to how this could be improved, he stated that keeping one target consistently for a period of time would allow this to be more easily achieved. This seemed particularly important where students would move onto a different topic that did not allow them to rectify or practice their weakness. As Katie stated: *"Sometimes our target isn't important in the next task, so I can't work on it.".* Interestingly, both low-attaining students in the sample reported this as a specific problem and felt that the rapidly changing nature of feedback did not allow enough time for them to achieve mastery. This is again consistent with the findings of Phye and Sanders (1994); where tasks change rapidly, specific feedback is not conducive to appropriate reflection and improvement.

Students were next asked to explore their own motivation to engage with feedback and the factors that affected this. A consistent theme in responses surrounded the visibility of progress to students; where it was felt that progress was clear, there was greater inclination to continue to engage with feedback. As Michael stated: *"Sometimes I can't [see improvement] so I think 'what's the point?!"* When asked to provide an example of this, he reported that in science, grades were used for a particular skill of prediction writing – where progress was visible, motivation increased to continue to do better. This was agreed by Imaan who said that: *"If I get a good comment then it makes me feel better so I work harder".* Perhaps unsurprisingly, both Michael and Imaan were in the higher-attainment group and both alluded to ego-involving factors in the value that they

placed on feedback. This was not seen with the middle-attainment group, who more commonly spoke of wanting to challenge themselves with feedback and improve. However, signs of ego-involving attitudes returned with the lower-attainment group who described losing motivation when they were unable to achieve highly at a task. As Katie stated: *"…I kind of give up."*. This was supported by Finlay who added that *"I know the comment is going to be more negative than positive, even if I tried hard".* This adds support to the concept that in praising results, those who achieve highly are likely to become complacent whilst though who show less attainment lose motivation. This is consistent with Dweck's (2006) theory of Fixed-IQ theorists. For those high-attaining students, achievement becomes constant regardless of the level of effort invested. Similarly, for low-attaining students, achievement remains low despite perceived high effort. The outcome of this is decreased motivation in the classroom, either through complacency or hopelessness – where progress seems to stagnate and effort is not rewarded.

This is closely linked to the findings of question 4. Students were asked to comment on the reviewing of previous targets and its role in promoting progress. All 6 respondents reported that when targets change too frequently, the value of feedback significantly decreases. Where comments did change too frequently, the feeling of hopelessness was further increased as it was felt that the improvements that were needed became insurmountable. This again reflected the findings of the questionnaire and was found here to be particularly true of the low-attaining students; as Katie stated, *"I don't really bother answering…it's too much to work on."*. As Martin (2002) warns in his review of

educational policy and literature, though motivation is critical to academic success, progress is vulnerable if students are not resilient to failure. As shown by the sample, when faced with study pressure, students lost motivation to improve. This ultimately affects engagement with the feedback process. Martin (2002) suggests that in order to tackle this, educators must equip students with recognition for their individual processes, being clear about their areas of improvement whilst giving a clear framework to support the improvement.

Finally, students were asked to consider the impact on their progress that a grade would bring, if part of their regular feedback process. All six of responses again indicated a positive opinion of grades as supportive to formative assessment. Perhaps most interestingly here was the opinion – voiced by three students – about the usefulness of summative grades if formative grades were not communicated. For example: *"…if we don't have a grade, there's no point giving us a grade in our reports because it's always a surprise.".* This was agreed by Finlay who stated that *"In our reports we get these grades for classwork and homework, I don't know where that comes from…".*

As previously outlined, the rationale for effort-graded feedback is to provide a method that allows students to measure their own progress and use comments and grades in a way that may complete the feedback cycle. This is in addition to improving motivation, engagement and attainment. As is clear from the initial questionnaire and interview findings, students echoed these issues which further supports the rationale for intervention.

5.2 First Cycle Findings

The first cycle of intervention took place during term 3. Students were introduced to the method of effort-graded feedback during instruction time, including the purposes and completion of the feedback tool. Significant discussion took place between collaborating teachers to decide on the most effective way for this to be done. As stated by T2 during initial teacher discussion (appendix 7):

"It is different to what they are used to. If they aren't sure how to use it, then it could take a while for them to get their self-assessment right."

It was decided that each class would be instructed in a practical, step-by-step approach of how to use the tool and what to expect. In standardising this practice, reliability of data obtained could be ensured. As T1 commented (appendix 7): *"…the initial time that the tool is used will be important for baseline results.".*

If students were under-confident in how to apply the tool correctly or interpret the criteria given, valid results would be compromised both between individuals within each class, and between groups. To ensure that this was managed effectively, standard practice between collaborating teachers would be essential. As part of teacher discussion, a standard approach to instruction was agreed to minimise such variation. During instruction, students engaged well with the concept under study and use of the tool.

Most reacted positively to the intervention, however some expressed negativity in their ability to achieve. As one student commented: *"Well I'm going to fail then, aren't I?!"*

This reflected the negative self-image that students in the cohort had regarding their own ability and academic success. The first homework was set for use with the effort-graded feedback method.

A further concern during initial teacher discussion was the rate of homework completion for this group. Typically, homework submission for these students was poor across the school. Prior homework submission for the cohort was, on average, 35% of the 50 students in the cohort. Significant follow-up was often required to ensure homework assignments were completed. T2 raised concern that continued poor submission may impact on the data range that would be collected. However, as T1 noted (appendix 7):

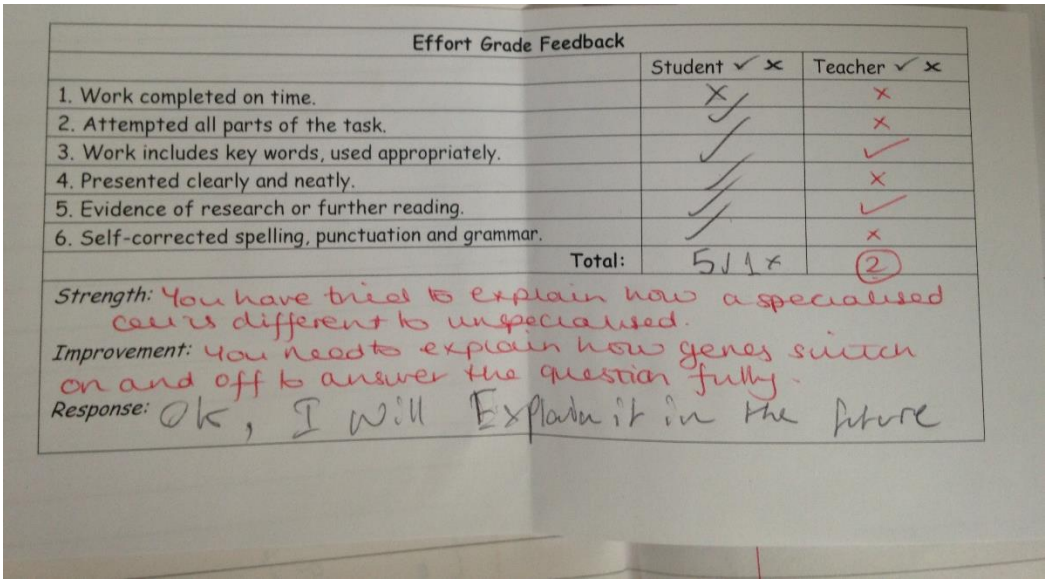
"…this is an essential marker of motivation and engagement – if they fail to complete homework as they might usually, then we know that the tool is not improving motivation..."

Despite concerns, on initial submission using the feedback tool the rates of completion increased dramatically. 92% of students completed and submitted homework on the set date. This was a significant first measure of motivation; where students are more highly motivated, they may be more inclined to spend considerable additional time in their study (Black and Wiliam, 1998). Collaborating teachers were careful in their initial

instruction to not discuss sanction or reward. To do so would risk guiding students to extrinsic motivation for the completion of work; as this was not standard practise in the classroom or the independent variable under consideration, it would risk introducing an extraneous variable and jeopardise the validity of results (Mitchell and Jolley, 2013).

Initial use of the feedback tool was completed by students. Interestingly, most students over-estimated their effort on the homework task set when teacher-marked. As shown in figure 9, students believed that their effort was higher than what they actually put into the task and this was consistent across the cohort. As stated by T1 in teacher discussion (appendix 8):

"They over-estimated the effort that they put in quite a lot. The main bit they over-estimated on was 'answering the task fully' and 'presenting neatly'."



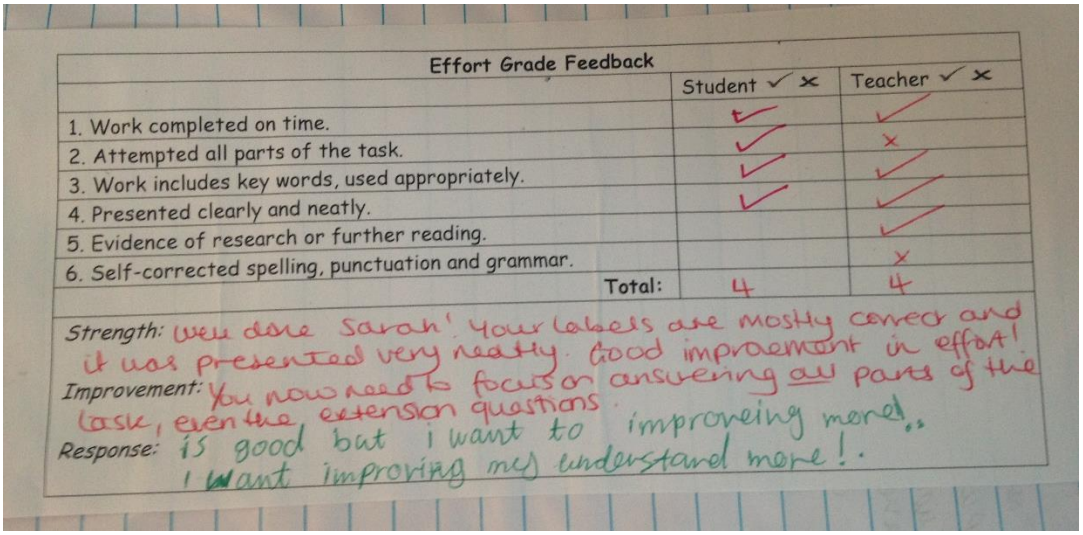
Effort Grade Feedback

	Student ✓ ✗	Teacher ✓ ✗
1. Work completed on time.	✗	✗
2. Attempted all parts of the task.	✓	✗
3. Work includes key words, used appropriately.	✓	✓
4. Presented clearly and neatly.	✓	✗
5. Evidence of research or further reading.	✓	✓
6. Self-corrected spelling, punctuation and grammar.	✓	✗
Total:	5✓1✗	(2)

Strength: You have tried to explain how a specialised cell is different to unspecialised.
Improvement: You need to explain how genes switch on and off to answer the question fully.
Response: Ok, I will Explain it in the future

Figure 9 – Student work sample (first cycle)

Students appeared to lack an accurate self-awareness of their own capabilities to be able to contextualise the effort that they put into the task. Even where students did tally with teacher assessment of overall effort, there was significant variation in the criteria that each felt was met (figure 10). There is a relative dearth of evidence into the development of effort-awareness in children. However, Nicholls (1978) poses that a child's awareness of their effort in learning is variable throughout childhood and adolescence. As age increases, so does the accuracy of effort perception. Nicholls (1978) suggests that this is closely linked to attainment motivation – such that when a child is able to accurately judge their effort, their motivation to learn and improve increases. Nicholls believes, through his study of cognitive development in the classroom on primary and secondary age students, that this is likely to be more fully developed by the age of 13 years.



Effort Grade Feedback	Student ✓ x	Teacher ✓ x
1. Work completed on time.	✓	✓
2. Attempted all parts of the task.	✓	x
3. Work includes key words, used appropriately.	✓	✓
4. Presented clearly and neatly.	✓	✓
5. Evidence of research or further reading.		✓
6. Self-corrected spelling, punctuation and grammar.		x
Total:	4	4

Strength: Well done Sarah! Your labels are mostly correct and it was presented very neatly. Good improvement in effort!
Improvement: You now need to focus on answering all parts of the task, even the extension questions.
Response: is good but i want to improveing more!.. I want improving my understand more!.

Figure 10 – Student work sample (first cycle)

Certainly, according to Nicholls, students in year 10 would have a more developed reasoning of effort, however I would reason that where effort is not routinely discussed in the classroom, students would not have the ability to self-assess their own effort using the same criteria that their teachers were using. Thus, perception of effort is likely to be skewed. This could be both above or below the real value of effort. It is likely that where little effort has been invested in work previously, any small increase in work effort will be translated as a gross increase - above what is realistic. There is also reason to question the generalisability of Nicholls' (1978) study; being conducted in American schools it is quite possible that different cultural and social constructs may affect the ages at which students achieve such self-awareness of effort and ability.

Throughout the course of the first cycle of intervention, student assessments of effort became more consistent with their teachers' assessment across the cohort and often within 1 mark of teacher assessment (figure 11) as there became a more shared understanding between the teachers and students of what constituted good effort. Indeed, as will be seen below, rewording and making clearer what constituted good effort more precisely was a key finding carried into and implemented in the second action research cycle.

One example of this improvement, and of the teacher explaining her perception of what good effort is so teacher and student have a better shared understanding, was presented by T2 during discussion;

"She rated herself quite highly to start with and I obviously marked her down on her effort. She didn't understand why and I explained it to her. Her overall score was 2 but this week she has come back and improved it to a 4 with even some research going in."

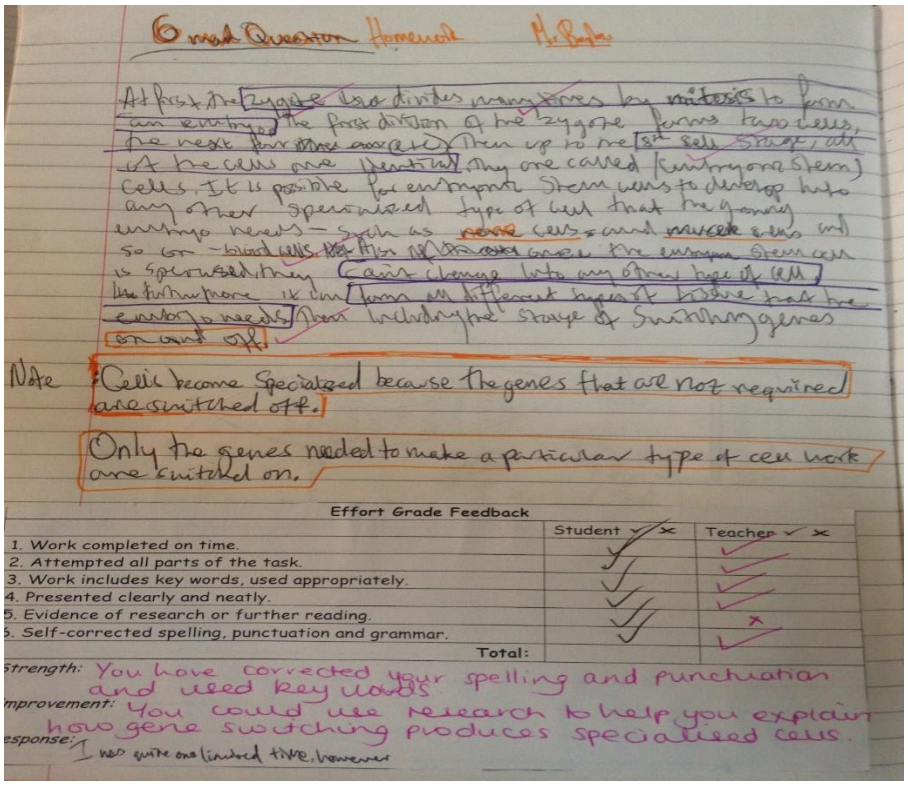


Figure 11 – Student work sample (first cycle)

In starting to answer the research questions, not only did the transition of students to become competent and self-aware of their own effort develop quickly during the first cycle, but motivation and engagement both appeared to increase. Students were more motivated to complete homework and high levels of completion continued. Moreover, there was a real interest in the classroom for students to find out about their effort grade and develop a drive to improve. In addition, both teachers reported that it became more

common for students to approach the teacher to ask for further advice on how to increase their effort and how to develop requisite study skills, such as online research.

In terms of engagement, students appeared to increase the extent to which they worked with their feedback; taking time to respond to the feedback tool and to compare old grades to current progress. Whilst anecdotal, this was agreed upon during teacher discussion. As T1 commented regarding one student (appendix 8):

"He doesn't seem very motivated by standard feedback but he was really keen to find out why I rated his effort the way I did. He also came up to me after our last lesson to ask where he should look on the internet for extra research if he got stuck!"

There is a well-defined link between engagement and progress (Pintrich et al, 1986). Whilst this may account for lack of engagement seen in lower-attaining students, a similar pattern is also seen in those who are highly capable – suggesting that engagement is a choice of students and is both task and subject dependent. Research suggests that engagement in any learning task is likely a result of the individual deeming that it has value to them (Pintrich, 1990). This would appear to support the findings of this study which demonstrates a correlation between those poorly engaged in responding to or using feedback and also seeing little value in the feedback process.

In their book on adolescent and educational cognition, Schunk and Meece (1992) go further to suggest that when such value is added to a task, students will be more likely

to apply their engagement without requirement for sanction or reward. Beyond this, they create an essential link between motivation and engagement; those who are poorly motivated may show only superficial engagement with a certain activity, whereas those more highly motivated will demonstrate deeper engagement. In this study, students are observed engaging in increasingly animated discussion, and seeking opportunities to speak with their teacher, about their feedback even outside of lesson time. This suggests both an improvement in motivated behaviour and in engagement.

Despite this shift in cognition, problems persisted in student understanding of the individual criterion of effort. There was difficulty both separating the idea of effort from ability and in understanding the individual nature of effort (or awareness of their own capabilities of effort). This was summarised effectively by a comment from T2 (appendix 8):

"I heard a few students talking about effort with each other and they were suggesting that some were able to put more effort in than others, because they were cleverer!"

As suggested above, cognitive development may affect the ability of students to both conceptualise and judge their own effort levels, yet social and cultural constructs of the meaning of effort may have a role to play. As explained by Yandell (2016) in his book on social constructs of meaning, the idea of effort in society has become more closely linked with ability. For example, society may contextually see effort as 'rewarded with money' (pp.15). Does this not dilute effort to be more comparable with work, where a

child may see this as something that is innate to an individual – those with more effort earn more money? Certainly, where an ability for high effort is seen as innate, it is perhaps unsurprising that students who achieve more highly are more inclined to see themselves of also 'possessing' more effort.

Nevertheless, this idea does not account for the overestimation of effort seen across the research cohort; whilst high-attaining students were included in this, lower-attaining were equally generous when self-assessing their own application to a task. If Yandell (2016) is correct, it should be more likely that the opposite effect would be seen here.

In a study by Ames and Archer (1987), it is suggested that the role of parents is crucial to a child's perspective of effort, in addition to peer influence. Researchers surveyed 500 mothers of American schoolchildren through kindergarten to 5th grade, from a range of social backgrounds. They found that mothers from lower socio-economic backgrounds were more likely to place value on high effort as being crucial for task achievement and success, whereas mothers from more affluent backgrounds rated high performance as more desirable. In a school that serves a predominantly disadvantaged community, it is possible that the cohort under study were inclined to place high value on effort and over-estimate the part that it played in the completion of the task.

Collaborating teachers agreed during discussion that rewording of the effort criteria would be essential in order to tackle this issue. It was found that the criteria, whilst specific and transferable, could not always be easily understood by students. This

ultimately affected the accuracy of self-assessment. If students do struggle to accurately assess their effort and are inclined to over-estimate this, more specific criteria that explicitly outlines the skills required would be crucial for students to develop their understanding of effort. For example, during the first cycle, students often misinterpreted the requirement for neatly presented work. It was often assumed that written answers, on lined paper constituted good effort. However, this did not address the issue that work was often clearly rushed, with untidy handwriting and regular crossings-out. The criteria were reworded to include 'not rushed' as a key phrase. As T1 commented (appendix 8):

"Certainly, what the students might think is neat is not necessarily what we would think. If they are going to improve their effort, they need to understand reality of what is expected."

With the exception of number 6, all criteria were reworded to refer to specific skills required (figure 12). This was again agreed by collaborating teachers and prepared for a second intervention period of six weeks.

Effort Grade Feedback		
	Student ✓ ✗	Teacher ✓ ✗
1. You have handed the work in on time.		
2. You have answered all parts of the task or question.		
3. You have used key words appropriately.		
4. You have presented it neatly and not rushed the task.		
5. You have used research to help you answer the task.		
6. You have corrected your spelling, punctuation and grammar.		
Total:		
Strength: *Improvement:* *Response:*		

Figure 12: Effort-graded feedback proforma (version 2.0).

5.3 Second Cycle Findings

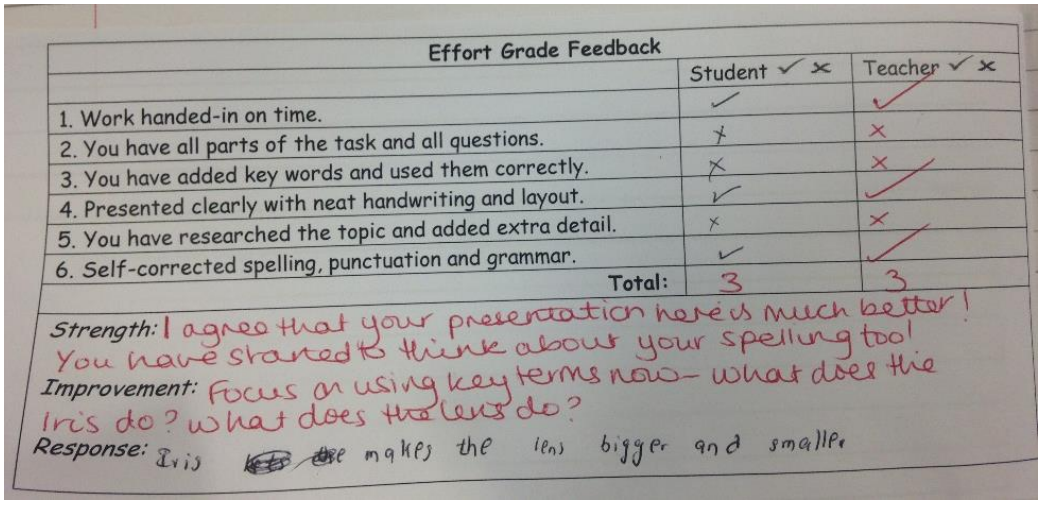
At the beginning of term 4, the amended feedback tool was explained to all students in the cohort and the intervention continued for the second, 6-week period. Each individual criterion was specifically explained to the group to ensure understanding that larger, more general criteria had been elaborated upon to provide several specific facets to each area that must be demonstrated.

Students continued to respond well to the feedback tool in both groups, and also continue to build on their understanding of effort. In particular, students began to be able to comprehend why they had or had not achieved the effort criteria more clearly than during the first cycle. This was evident both in the written responses of students to

feedback and in their discussions with peers and teachers. As T2 commented (appendix 9):

"…the criteria are a bit more specific and the students… understand why they are or aren't achieving each point."

The impact of this was also notable in the accuracy of student self-assessment on the tool; grades allocated by students started to match more closely with those given by the teacher. Students appeared to become more realistic about the level of effort put in to the tool. In one example (figure 13), the student accurately matched their level of effort with the teacher assessment. This particular student had, throughout the first cycle, been inclined to overestimate their effort, particularly surrounding their presentation of work. However, with more specific guidance on the criteria, presentation of work improved in-line with self-assessment.



Effort Grade Feedback

	Student ✓ x	Teacher ✓ x
1. Work handed-in on time.	✓	✓
2. You have all parts of the task and all questions.	x	x
3. You have added key words and used them correctly.	x	x ✓
4. Presented clearly with neat handwriting and layout.	✓	✓
5. You have researched the topic and added extra detail.	x	x ✓
6. Self-corrected spelling, punctuation and grammar.	✓	✓
Total:	3	3

Strength: I agree that your presentation here is much better! You have started to think about your spelling too!

Improvement: Focus on using key terms now – what does the Iris do? what does the lens do?

Response: Iris ~~does~~ does makes the lens bigger and smaller

Figure 13 – Student work sample (second cycle)

Whilst this is a significant effect on those students who would overestimate their effort, the effect appears larger with those students historically underachieving in science. As presented by T2 in teacher discussion (appendix 9), Tom would frequently use lack of effort as a defense to underachievement in the classroom. His self-assessment during the first cycle reflected this. However, during the second cycle, he began to use the feedback more thoroughly and his began to match teacher assessment more closely. As stated by T2: *"It's a small shift but for him that's quite a big thing."*

Juvonen (1997) presents an account of this in discussion of the stigma that surrounds the term 'effort' for students. She notes that there is a trend in adolescents to only refer to effort as an excuse for failure and that this happens increasingly as the child gets older. In this way, students make themselves more socially acceptable to their peers as refusing to conform to social norms. This implies that a child would under-estimate their effort on a feedback tool and, by extrapolation, may also leave scope that when asked to estimate their effort level there is little experience of knowing what high effort looks like - having historically usually denied the presence of effort. For these students, the shift in moderating reflection of their own learning is marked.

As a key success measure of effort-graded feedback, and research questions in this study, the motivation and engagement of students with the feedback process was closely monitored. Throughout the course of the second cycle, students began to demonstrate increased willingness to work with their written feedback to add value to

their future work. There was an improved ability from students to respond to feedback readily upon its receipt without the need for prompting. As T2 commented: "*they get their sheet back and read through it straight away.".*

This reveals a heightened engagement with the formative assessment process, whereby students can see the benefit in receiving and working with feedback. This in turn continues a cycle of improved work and further positive impression of the process.

As an example of this, it was noted by collaborating teachers that a students use of old feedback to enable progress was increasing throughout the cohort. Students would receive their completed feedback tool and immediately turn back to previous comments to see if they had improved. This frequently sparked discussion between the cohort regarding what they had done to be able to accomplish the change. There was a notable shift in classroom atmosphere to one of higher self-expectation from students and greater motivation for the process of learning. This was even evident when students had not achieved or progressed within a feedback cycle. For example, on one occasion, Josh received feedback, looked back through his book to compare to previous grades and comments and was surprisingly frustrated with himself that he hadn't managed to improve in the 'full-task-completion' criteria; *"it was just his attitude of caring that he hadn't done it as well as he could that struck me"* (T2, appendix 9).

Whilst not initially a measure of success of the feedback tool, resilience is a significant aspect of the learning process and a characteristic of successful learners; those that are

able to withstand failure and be keen to continue to improve tend to be more intrinsically motivated and face challenge in learning better (Dweck, 2006). What was surprising throughout the study was that setback did not impact on engagement with the feedback process or motivation to improve. Indeed, homework completion remained high at an average 90% submission rate throughout the second cycle. Prior to intervention, the cohort had demonstrated a lack of resilience in their studies, leading to them 'giving-up' when facing challenging topics, or being significantly demotivated upon receipt of a poor grade. Even when a student's effort grade was lower than previously achieved here, however, much greater resilience was witnessed.

In a study by Niiya et al (2004), American students were first assessed for their levels of self-esteem and opinion on the innateness of intelligence. Their reaction to a poor grade on a summative test was then measured. It was found that students who had an entity view of intelligence (where intelligence is seen as fixed and constant throughout life) were negatively affected by the result in terms of both self-esteem and resilience to continue. However, those with incremental views of intelligence (where intelligence develops through experience) experienced less disengagement and demonstrated higher resilience. In praising the learning process as opposed to the outcome, a high locus of control is maintained by students whereby they see success as self-dependent and not pre-determined. This lends more to the incremental view of intelligence and may support the findings here that higher engagement and resilience were seen. Some caution must be exercised here; psychological tendencies are likely to be influenced by varied factors such as life experiences and cultural context. As this study was

performed in American schools, it is likely that the cultural environment would be different to the one of this cohort. Therefore, generalising findings is difficult without further study with the target population.

However, support for this theory is provided by Yeager and Dweck (2012) in their review of cross-cultural research into the effect of mindset and view of intelligence on resilience and motivation for learning. They find a similar significant impact as concluded by Niiya et al (2004) and go further to suggest that intellect-based praise is less desirable that process-praise to foster such resilience. This in turn adds weight to the observations made during this action research.

5.4 Post-Intervention Findings

5.4.1 Questionnaires

Post-intervention questionnaires were completed by 50 students at the end of the second cycle. 2 responses were excluded for non-completion in at least 3 of the 8 fields. Student demographics were again captured to allow comparison to the original sample (figure 14). Where initial samples are different from the final sample, results may not be directly comparable and introduce a lack of validity into findings (Lodico et al, 2010). A comparable sample is revealed with an additional respondent in the B grade category.

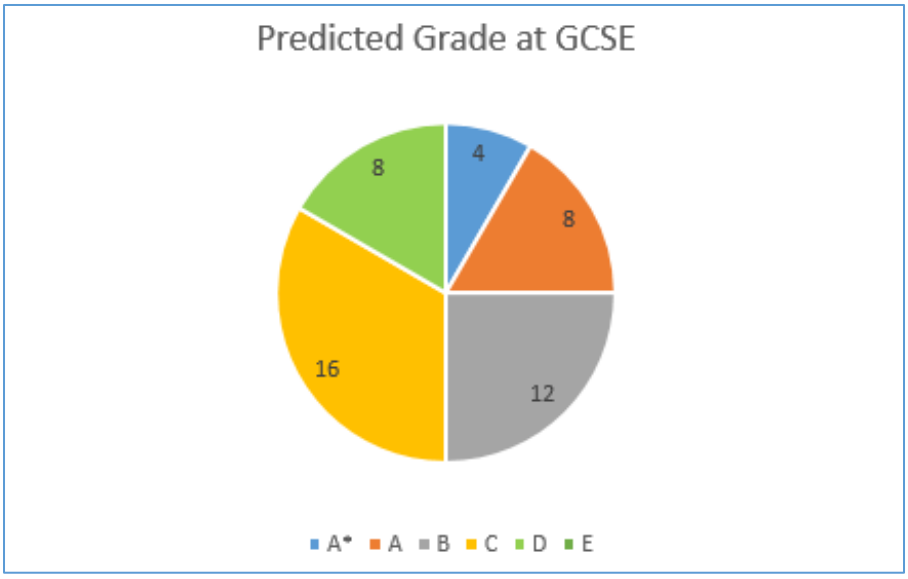


Figure 14 – Student demographics from questionnaire by predicted grade at GCSE.

Students were again asked to select the type of feedback most commonly received. Written feedback with grade was selected in all 48 responses. This reflects the intervention and confirms the shift in feedback method to a universal approach with effort grade. In extending this point within question two, a mean Likert score of 3.8 was found, indicating that a grade was given on work in most – if not in all - cases of feedback. Whilst 100% feedback with grade may be expected given the intervention under study, it is notable that verbal feedback remains an important and consistent part of feedback in the classroom. Effort grades were not applied to verbal feedback under this methodology and it is likely that this resulted in a Likert mean below 4 for this field.

In responding to question 3, regarding the usefulness of written feedback in making progress, a striking comparison was found; most common selection of answer was ‘always useful’ with a mean Likert score of 3.7. This is a marked improvement on the

2.9 mean found in initial questionnaires; students reported finding feedback significantly more useful in ensuring progress. However, perhaps more surprisingly, there were no selections of either the 'rarely useful' or 'not-useful' fields. This early indication suggests that all students were able to benefit from effort-graded feedback in conjunction with written feedback to a greater extent than written feedback alone.

In qualifying these answers through question 4, several key themes in responses again arose showing trends in opinion (figure 15).

Common Themes (in order of frequency)
Opportunity for improvement.
Coaching to facilitate improvement.
Clear and understandable feedback.
Visible progress.

Figure 15 – Themes of student responses – question 4

All themes display overwhelmingly positive trends in opinion of effort-graded feedback. Comments suggesting that feedback gave an opportunity for improvement was cited most commonly. Interestingly, further light is shed on this shift in the second theme; use of the tool had changed the culture of feedback to be more focused, allowing for coaching to be more widely used between teacher and student. In contrast to the 5th most commonly cited reason in pre-intervention questionnaires. As one student

commented: *"I can keep trying to get better each time…it doesn't matter what the next task is, we can always work on feedback".*

This supports teacher discussion and observational findings that students were using old feedback more readily to support their progress. Evidence from Clarke (2011) draws a link between allowing adequate response to targets and the overall climate of feedback in the classroom. In his book on formative assessment in the classroom, Clarke states that where teachers do not give targets that can be worked upon by students in a reasonable time frame, a poor climate of engagement for feedback is fostered. Certainly, there was an initial correlation of this seen in pre-intervention questionnaires. However, it is evident with more opportunity to improve on feedback, student perception of such feedback has improved.

Students also commented upon the aspect of coaching that effort-graded feedback allowed to enable improvement. Although a central facet of effective written feedback, that it be constructive and provide students with the steps needed to improve (OFSTED, 2015), initial questionnaires revealed that feedback did not always work this effectively. However, in introducing effort-grades, the prevalence of comments to this end increased. As one student remarked: *"it's clear how I need to improve"* whilst another stated that *"I've probably worked out what I need to do before it gets marked by the teacher…just from the tick list on the sheet".* A greater degree of independence in using feedback was seen and this linked to the clarity of how to improve. Certainly, this indicates that concerns that grading places an emphasis on the task and is too 'ego-

involving' (Tanner and Jones, 2005, pp. 65) may not apply to effort-graded feedback, which conversely appears to have placed more emphasis on process for students.

In response to question 5, responses again revealed a mean Likert score of 3.8. This is again a significant improvement on the initial score of 3.2 pre-intervention. The majority of students reported that they responded to feedback 'all of the time'. There were no answers to suggest that feedback was either rarely or never responded to. In elaboration of this point in question 6, students most commonly reported that feedback provided an opportunity to improve upon weakness as a justification (figure 16). Whilst in itself representing a significant shift - where the same theme was the least commonly referenced trend pre-intervention – perhaps most interesting of changes post-intervention is the loss of the theme that response is purely a requirement. Only 3 student responses referenced any such rule that response was expected as their main motivation. This is compared to 24 responses pre-intervention. Such a trend indicates a significant shift in motivation that supports observational data collected throughout the first and second cycle; referencing a requirement to respond indicates extrinsic motivation, where completion is more about compliance to avoid punishment or seek reward. However, in the loss of this theme post-intervention, high intrinsic motivation is indicated – whereby students are responding because of a perceived personal and internalised benefit (Dweck, 2006). These findings echo those of Bransford, Brown and Cocking (2000) in their book reviewing evidence on neuroscience, psychology and successful classroom practice. They state that for students to develop desired

motivational characteristics, they must be able to place value on classroom practices and recognise that their instructors do the same.

Common Themes (in order of frequency)
Opportunity to improve upon weaknesses.
Easy to respond.
Natural part of the feedback process.

Figure 16 – Themes of student responses – question 6

Question 7 asked students to revisit their opinion of how previous targets are reviewed by teachers and progress assessed. A mean Likert score of 3.7 was reported by respondents. This is perhaps unsurprising due to the essential nature of effort-graded feedback that facilitates comparison between old targets and new targets to demonstrate progress. However, it is an increase on the mean Likert of 2.5 shown pre-intervention. It shows a clear increase in the use of old targets by teachers to track and comment upon improvements. Elaboration on this response through question 8 revealed comments that were overwhelmingly more positive than shown pre-intervention. One student commented that: *"It's easy to see where I've done better or worse"* whilst another stated that *"It's the whole point of having the effort grade to compare to how you've done before…I can see quickly if I'm doing the right thing".*

Through teacher discussion, it was felt that use of some form of grading enabled easier recording of feedback that could be tracked and returned to easily – thus fostering better linking of old targets with new targets and completing the feedback loop.

Whilst there is a relative dearth of research in the area of this reflection of feedback, one study by Quinton and Smallbone (2010) goes some way to explain the effect. The authors recognised the gap in the feedback cycle where feedback was not returned to and reflected upon by lecturers and students alike – a process termed 'feeding forward' (pp.125). They trialed a model of a simple self-copying mark sheet with feedback that was filed and recorded on completion of coursework. It was then returned to build an accurate picture of progress to the student upon subsequent work. It was found that by capturing experiential learning and being able to return to it easily in teacher feedback, student engagement with the process improved. Whilst not directly generalisable to this sample of secondary school students, the findings do link closely to well-established work on feedback cycles and therefore findings can be cautiously extrapolated to explain the benefit of such 'feeding-forward'.

5.4.2 Interviews

Interviews were conducted using the initial sample of 6 students. Questions were again targeted to elicit further detail on issues raised through questionnaires (appendix 6).
5 respondents reported that they had made positive overall progress in science using effort-graded feedback. This is consistent with the improved Likert score revealed in

questionnaires. As Shakera reported: *"I started on a 2…then got better up to 5!".* However, Michael stated that *"but mine was a 5 on the first bit of work that I did.".* When challenged to further explain how he responded to this he replied that *"Well, I could have got a 6, so I read the feedback…".* This suggests that even when initial effort was high, complacency was not fostered amongst the cohort. This was supported by Abdullah, who added that *"It's not like you could just ignore it [feedback], because the next piece could be worse…I wanted to know why I'd got a good grade!".* This again counters the argument that grading is ego-involving and likely to foster complacency amongst high-achieving students (Tanner and Jones, 2005).

In response to being asked to suggest why they believed progress had been affected in this way, increased motivation was referenced in all six responses. Michael elaborated upon his earlier response to reveal that *"I thought I was ok…so I didn't bother too much – I put time into other subjects".* Despite receiving a relatively high grade for effort on an initial assignment, he did not become complacent and instead saw greater scope for himself to improve. Imaan concurred with Michael and added that previously, when encountering a topic she didn't understand, she would not seek to improve her understanding any further but 'write-it-off' in effect. However, with heightened awareness of effort, Imaan realised that difficult topics may be hard because of the effort she is applying to it. This is particularly interesting; as a higher-attaining student, it may be expected that failure to perform in a particular task would be blamed upon low effort (Juvonen, 1997). However, in contrast to Juvonen's suggestion that this would be

used as a defense, this student used it to critique herself and thereby demonstrating intrinsic motivation to improve with a high locus of personal control.

In order to explore this further, students were next asked to assess any changes to their motivation following intervention. All responses suggested a positive shift in motivation and closely linked this with the will to work harder and be more self-challenging in lessons. This is again consistent with questionnaire responses to question 4 and to the observations of collaborating teachers; greater motivation to use feedback as part of classroom culture is evident to all stakeholders. Interestingly, both lower-attaining students suggested that they would take extra opportunities to learn despite finding work difficult. Katie stated that: *"If I get stuck now, I just ask for help…"*, whilst Finlay reported that *"I started actually doing my homework!".* Prior to intervention, both of these students were predicted D grades and demonstrated aspects of being 'helpless children', whereby failure is seen as beyond their control (Black, 1998) this is a significant shift in motivational behavior. Notably, however, Black (1998) believed that such 'helpless children' would be caused by grading; conversely, the opposite has been found here.

When asked about the extent to which students read written feedback, 5 of 6 respondents reported a perceived improvement in their engagement, with only Imaan feeling that her consistent reading of feedback had continued from pre-intervention. Both Katie and Finlay acknowledged that this was largely due to the comments being

more individual; *"because it's my score, I know it is pretty just my thing"* (Katie, appendix 6).

As previously highlighted by Kluger and DeNisi (1996), feedback should be task-oriented to maximise the effectiveness of written feedback. However, converting this to classroom relationships is difficult and can result in feedback that is too generic and repeated; where this occurs, students perceive that their feedback is not personal enough to them (Brookhart, 2007). What appears successful here is that feedback was based on consistent criteria with several facets – each student's feedback is highly likely to be individual to them based purely on their very differing levels of effort. Such feedback is able to tread this fine line of the personal and impersonal, giving students the sense of *individualised* feedback.

Finally, students were asked whether effort-graded feedback has changed the way that they review old targets. All six students reported using feedback to a greater extent to build an effective cycle; old targets and scores were more commonly reviewed and fed into future work. As Michael states: *"we did two similar writing homework's, so…the old feedback had a target that I needed to remember".* Perhaps most surprising is the trend amongst the lower-attaining students to reference parental and social factors in tracking and monitoring their progress through feedback. Katie reports showing her mother her feedback to prove her progress over time, seeing a shifting effort grade. This pattern of familial interest in grades is important and is commonly seen amongst lower-attaining students from lower socio-economic statuses (SES). Chen (2005) outlined the issue in

her study of social mobility in China. She found that families of lower SES were often unable to access cultural capitals that would enable their children to achieve social mobility. They had a greater reliance on educational capital and would therefore take greater interest in the progress and grades of their children. Use of effort-grading in this way is likely to have social implications as a result, and influence the extent to which it is used and tracked over time. The findings of Chen (2005), however, must be treated with caution and can be criticised for reliance on paternal income to guide SES determination; maternal employment is not considered in determining social status and the accuracy of this may be affected as a result. What is clear, however, is that engagement with the feedback process has increased for all students in the sample and in some instances extended into social and familial branches.

5.4.3 Attainment Data

In order to address the third research question of this study – 'does effort graded feedback benefit attainment' - data was gathered for all students in the cohort throughout assessment points 1-3 and sub-levels of progress averaged to provide a mean level of progress for each point. This data is represented in figure 17.

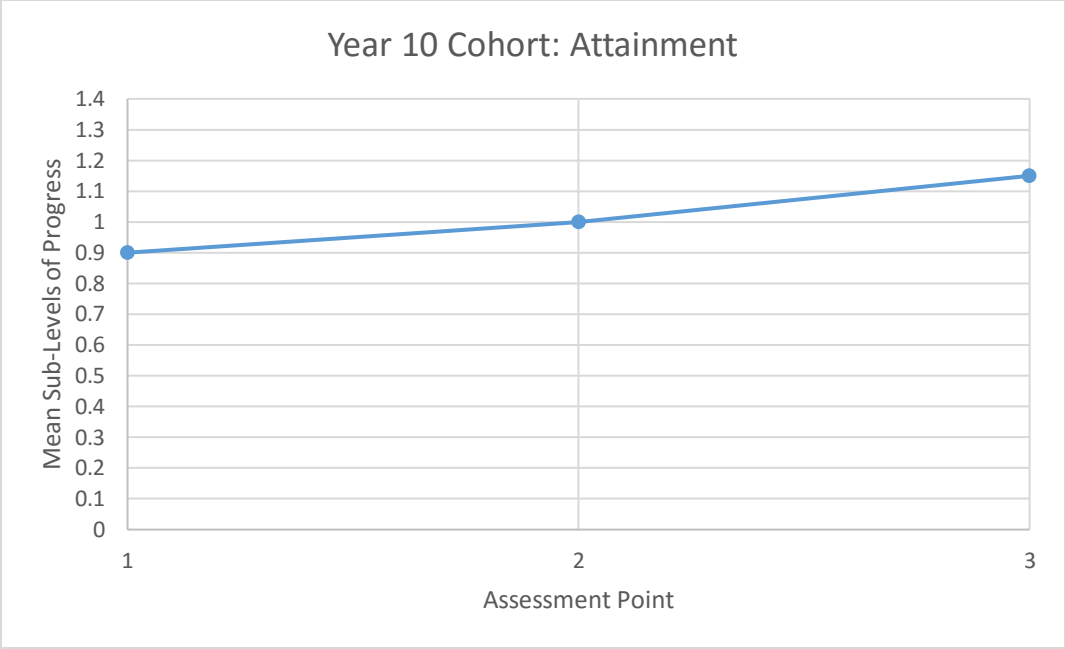


Figure 17 – Mean sub-levels of progress for study cohort

As can be seen, attainment data suggests that mean sub-levels of progress rose from AP1 to AP3 by 0.3. During the intervention period prior to AP3, mean sub-levels of progress was at its highest at 1.15, compared to 0.9 at AP1 and 1.0 at AP2.

Whilst this would initially suggest moderately increased attainment during the intervention, there is a steady increase in sub-levels of progress throughout the year even between AP1 and AP2. At the rate seen of 0.1 sub-level difference per term, it may be extrapolated that 1.1 sub-levels would be expected at AP3 anyway. This difference leaves a 0.05 sub-level of progress made beyond this extrapolation during intervention.

However, increasing trends of attainment throughout the academic year, and non-linear increases in this attainment, may not be uncommon. To allow comparison of the cohort's attainment, a cohort of year 10 students from the previous academic year (2014-2015), matched for mixed-ability stream and course, was also included for data analysis (figure 18).

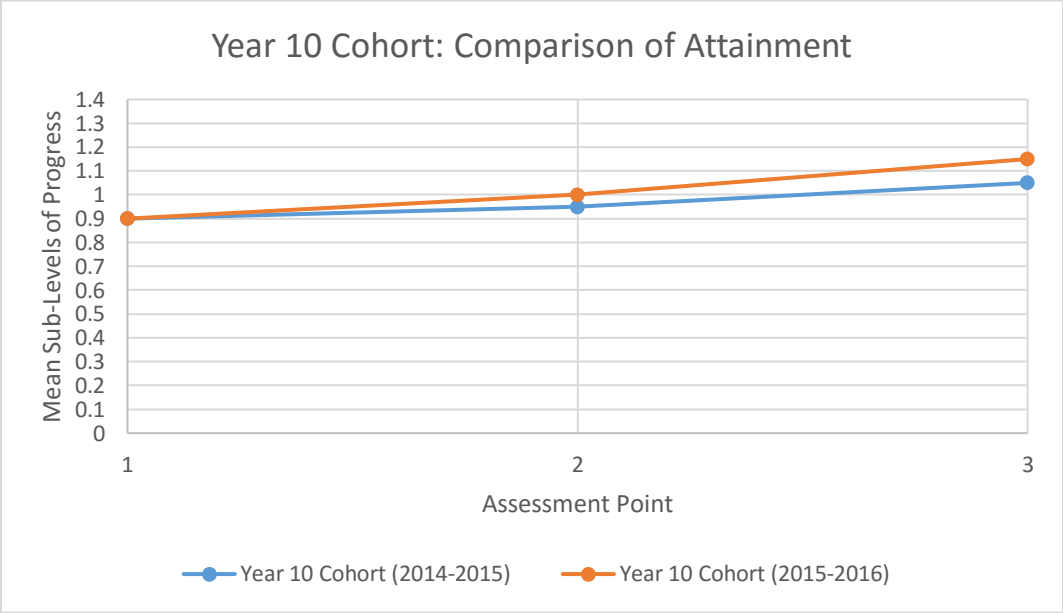


Figure 18 – Mean sub-levels of progress for study and control cohort

Data from the year 10 cohort (2014-205) reveals a similar trend of increasing attainment throughout the academic year. Initially a 0.05 difference was seen between AP1 and 2 followed by a larger difference of 0.1 sub-level added between AP2 and 3. There is a similar initial progress mean of 0.9 sub-levels at AP1, rising to 1.05 at AP3. Notably, the current year 10 cohort saw a greater increase in mean sub-level of progress between AP2 and AP3 of 0.15, compared to 0.10 for the previous academic year's cohort. This is

in addition to generally higher overall progress of 0.25 sub-levels of progress throughout the year. This is compared to 0.15 for the comparison cohort.

Whilst this data would imply a small increase in attainment, above what might be expected during the intervention period, I would caution against drawing causal conclusions from this limited sample and range. Measuring academic progress in educational research is difficult to achieve with any validity to findings due to the varied extraneous variables that may impact upon data gathered (Brewer and McEwan, 2010). Quality of teaching, content covered and even personal issues experienced by students may all affect progress made. It may be extremely difficult to control for all of these factors to be able to draw causal links between an intervention and attainment as an outcome.

To see academic progress as a measure of an intervention in educational research may also take considerable time. In a paper by Osborne et al (2012), a large-scale project was described that sought to introduce practices centered around the use of argumentation in science teaching. Lead teachers helped to embed argumentation into the practice of their colleagues in four secondary schools. The intervention took place over a period of one year and data collected pertaining to academic progress. The researchers discovered no findings of significance. Osborne et al posed that any new instructional practice, adopted by teachers, should be expected to take two years to fully embed and use effectively. Mistakes are likely and in the initial one-year period, drawing conclusions from such data would be difficult.

In support of this, a study by Roth et al (2011) as part of the Science Teachers Learning from Lesson Analysis project, concluded that 100 hours of instructional practice is necessary for teachers to be become competent enough in a skill that it may begin to affect student outcomes.

In attempting to introduce a new teaching and learning practice over a short duration, it is perhaps unsurprising that little data of statistical significance was obtained. With longer implementation it is possible that further benefit on attainment may be achieved. However, it should be noted that whilst attainment did not change markedly within the intervention period, neither did attainment decrease; shifting from established practices of written feedback to effort-grading did not negatively affect students.

5.5 Teacher Collaboration

Collaborative teaching practice offers benefits that go beyond the sum of the individual parts of the partnership. This is true both for teacher professional development and in the conduct of action research. In using collaboration to enable teachers to develop their practice, the opportunity to share expertise and understanding from a wider background of different experiences may be significant to the success of learning; certainly, professional development through isolation appears to be ineffective (McNicholl, J., 2013). In conducting research intended to impact on pedagogy, the benefits of collaboration are equally prevalent. Teachers may often feel detached from

the research base that should be influencing their practice (Ayres, Meyer, Erevelles and Park-Lee, 1994) and when attempting to conduct research, not maximising its effectiveness by attempting to do so in similar isolation (Lang and Page, 2011). Certainly, as Lang and Page comment in their study of teacher-collaborating research, projects that are conducted between several teachers - or a researcher and a teacher – have added sustainability in the classroom and are more likely to be embedded into practice.

Within this study, teacher collaboration enabled effective identification of problems and successes; through close discussion, both teachers were able to identify, suggest solutions to and work to resolve or further investigate issues throughout the research process. This was particularly important when reviewing the progress made after the first cycle of intervention; the feedback tool was written by one teacher and where this needed amending, it would have been ineffective for that same teacher to do so alone. By sharing practice, a more objective solution was reached – as reported above.

Collaboration also has an impact on the validity of research; time constraints on individual practitioners make recruitment, monitoring and data-collection difficult to achieve from a large cohort. However, collaboration ensured that a large student-body could be recruited. This ultimately benefitted the validity, and generalisability, of findings.

Within academic research, so-called ‘researcher-effects’ may also be a challenge to such validity. This is whereby the researcher elicits biased results from a cohort of participants, and is particularly likely where the cohort is previously invested, or known-to, that researcher – such as in teacher action research. In utilising collaboration, the effects of this can be mitigated; not all of the cohort will be known to each teacher and this can be used to the researchers’ advantage when conducting data collection or eliciting responses during interview (Lassonde and Israel, 2010). In this study, the interview sample was taken from both classes and combined. Due to this methodology, both teachers would be known to the group and such researcher-effects possible regardless of interviewer. This is a limitation to this study and, during further roll-out of effort-graded feedback, collaboration with a larger sample group would allow for teachers not involved in the education of the sample to be interviewers. However, it should be noted that, as demonstrated above, interview responses were highly supportive of the themes shown in anonymised questionnaires; students did not adapt their answers for approval or to reflect bias towards the researcher.

However, collaboration does bring challenges to consistency. Researchers will have a clear idea of the intervention that intend to apply, but there is a risk of becoming diluted when responsibility is shared to deliver it. In order to tackle this, regular teacher discussion was effective in ensuring that common goals were shared and peer-monitoring could be conducted throughout the research phase.

When considering the wider use of effort-graded feedback in classroom practice, collaboration between teachers is central to the success of the intervention. It is clear that in order to achieve the shift between praising process over product, significant student learning must take place to reconstruct a realistic understanding of effort. In attempting to achieve this in isolation, the submersion of students is unlikely and real benefit may be delayed.

6.0 Conclusion

Throughout this study, I have sought to answer the central research focus: 'does effort-graded feedback improve outcomes in the classroom?'. Within this conclusion, I will return to consider each of the three key research questions that have guided this study, summarising the evidence presented before considering the wider implications of these findings and their transferability to wider educational practice.

6.1 Research question 1: Does effort-graded feedback enhance motivation for learning?

It is clear that throughout this intervention, student motivation to produce high-quality work and improve attainment has increased significantly. Initial questionnaires revealed that motivation to use feedback to enable improvement in learning was highly extrinsic in nature and promoted by the threat of sanction and possibility of reward. Further elaborated through interviews, students reported that their motivation to learn was highly contingent on good results and demotivation was common where

underperformance was fed-back. This ultimately led to complacency in highly-achieving individuals and a sense of hopelessness and resignation in lower-attaining. This was particularly true where targets were deemed to be insurmountable and lacking clarity. Such poor resilience to failure was evident and a clear link was established between this and motivation through the evidence base (Niiya et al, 2004; Dweck, 2006; Yeager and Dweck, 2012). This was visible in the classroom through homework completion rates of 35% even with contingent reward and punishment.

Post-intervention motivation increased markedly. Homework completion rose to 92% upon first assignment and remained constant at 90% throughout the second cycle. As Black and Wiliam (1998) commented, increased time spent on academic work is directly linked with motivational behavior.

Increased motivation was also evident in the classroom; teacher discussion revealed that students were more commonly seeking out the teacher to ask for extra information to support their feedback and guidance on how to improve. Animated discussion was noted between students upon the receipt of feedback. This was even noted when students had not progressed (or even regressed) in their effort-grade; such resilience indicates a shift from extrinsic to intrinsic motivation (Dweck, 2006). This observational finding is supported by the quantitative and qualitative analysis of questionnaire and interview data and improvement is most notable in the low-attaining cohort who reported low motivation and resilience pre-intervention.

The evidence base states that when children are able to judge their effort more effectively on tasks, motivation to attain increases (Nicholls, 1978). Through observational data of self-assessment effort-grades that were increasing in accuracy, this positive shift in motivation is clearly supported.

Furthermore, throughout this action research, students have been central to the process of using and refining the feedback tool; their understanding of effort impacted on the adjustments seen during the second cycle. This offered students the opportunity to meaningfully engage with their teachers and have their voices heard. Collaboration was not, therefore, just between teachers but also with students and it is conceivable that this essential interaction may have contributed to the motivational changes seen in students.

6.2 Research question 2: Can the use of effort grades enhance engagement with the formative assessment process?

Motivation and engagement are inextricably linked, and poor motivation is likely to induce superficial engagement with tasks (Schunk and Meece, 1992). When value is added to a particular task, students are therefore more likely to apply engagement without the need for extrinsic motivation (McMillan, 1977; Cross and Cross, 1980).

Engagement increased even in initial findings. Observational data demonstrated that students began to increase the time taken to respond to feedback and to compare new

grades with old grades. Data analysis confirms that the frequency of both responses to written feedback and reflection on historical targets increased throughout the study and a majority of interview responses identified better engagement in their use of classroom feedback. This even extended socially, in one case, to include peers and family, where increased engagement was seen in the formative assessment process and is consistent with the differing priorities of SES and cultural groups (Chen, 2005).

In giving students workable targets, a reasonable time frame for improvement and a consistent measure of progress, engagement with formative assessment can be increased (Clarke, 2011). I would suggest that in order to increase the meaningfulness of student responses to teacher feedback, we must first make feedback meaningful to them.

6.3 Research question 3: Does effort-graded feedback benefit attainment?

The central aim of high quality feedback is to promote attainment and progress amongst students (Hattie and Timperley, 2007) and this is particularly true of those from disadvantaged background (EEF, 2015). Therefore, attainment must be a central measure of this study. However, proving academic attainment is difficult in education research; isolating variables, instilling teacher expertise and using a suitable duration may all be necessary to show the effect of an intervention (Roth et al, 2011; Osborne et al, 2012).

Attainment data collected from the research cohort, and matched to an equivalent cohort for comparison, revealed no significant increase in attainment. This is perhaps unsurprising where a new skill must be learned, delivered and instilled in students within a short time-scale. It is unlikely that maximal benefits of the intervention are to be passed to students until collaborating teachers are comfortable with this themselves, and this may take up to two years to achieve fully (Osborne et al, 2012). However, there was certainly no detrimental impact to attainment noted from the use of effort-grading.

6.4 Implications for Future Practice

Written feedback is an aspect well entrenched in contemporary pedagogy and its benefits heavily described in the literature base (Black and Wiliam, 1998; Hattie and Timperley, 2007; Shute, 2008). Despite this, there is a relative dearth of research to explore the benefits of praising effort. Even in this field, current research is limited to purely qualitative feedback and little has been done to explore the possible role of grades as constructive formative assessment.

In review of the literature base and through use of student interviews, however, this study has shown that written feedback is not always effective in promoting reflection; the extolled benefits of such constructive feedback, in terms of engagement with the feedback process, motivation to achieve and overall attainment do not seem to be fully realised. As is raised by Torrance (2007):

"Key elements of formative assessment are…interpreted very narrowly, with an overwhelming focus on…award achievement." (pp.282)

This study has produced unique findings in the literature base that challenge widely held views of feedback and reopened consideration of how grades can be used to remedy ineffective written feedback practices. It has found that by praising the process of learning, as opposed to the products, student perceptions of feedback, their motivation and their engagement can be markedly improved. Furthermore, some repair can be bought to the often broken feedback cycle that results from ineffective classroom practices and time constraints.

It is conceivable that with larger-scale and longer-term intervention, added-value may also be seen in classroom attainment, beyond that possible from written comments alone. As this study was conducted on a small scale, a larger study with an increased participant cohort, is now important. This may provide a wider data set from which to be able to extract statistical significance. Due to the cultural and social influences on motivation, I would also recommend that these methods are also repeated in different social contexts to check the generalisability of findings to the wider secondary school population.

Effort-graded feedback may be widely adaptable and further trials are now also needed in subjects beyond the science curriculum to test and confirm efficacy. Though this study was conducted in two phases to allow for necessary refinements, I would

recommend that such a 2-stage model is maintained in wider educational use. It was clear that student perceptions of the meaning of ‘effort’ are often differing and non-specific. This variation is likely to persist both in different social climates and even between subjects. Where this is not diagnosed by practitioners and explicitly addressed, a crucial learning opportunity may be missed; the process of refining the meaning of effort through criteria is central to the success of students. The interdepartmental use of this tool will also allow for wider teacher collaboration; expertise is further shared laterally throughout the school allowing for consistent, best-practice to be established. Whilst in a busy school environment the opportunities for this can be strained, practice can be effectively shared between colleagues through teaching and learning meetings and be further accommodated with support from the senior leadership team (SLT) – as part of this project, I will present all findings to SLT with a view to facilitate such essential collaborative work.

Appendix 1: Reference List

Ames, C. and Archer, J. (1987) 'Mother's beliefs about the role of ability and effort in school learning, *Journal of Educational Psychology,* 79(4) pp.409-414. DOI: 10.1037/0022-0663.79.4.409

Athanasiou, T., Debas, H. and Darzi, A. (Eds.) (2010) *Key Topics in Research and Methodology*, London: Springer.

Aubel, J. (1994) *Guidelines for studies using the group interview technique.* Geneva: International Labour Office.

Ayres, B., Meyer, L., Erevelles, N., & Park-Lee, S. (1994). 'Easy for you to say: Teacher perspectives on implementing most promising practices', *Journal of the Association for Persons with Severe Handicaps*, 19 pp. 84–93.

Bayliss, S. (2015) 'Understanding written feedback: are student perceptions in line with education research?', Unpublished MSc dissertation, University of Oxford.

Becker, M., McElvany, N. and Kortenbruck, M. (2010) 'Intrinsic and Extrinsic Reading Motivation as Predictors of Reading Literacy: A Longitudinal Study', *Journal of Educational Psychology*, 102(4) pp.773-785.

Black, P.J. (1998) *Testing: Friend or Foe? Theory and Practice of Assessment and Testing.* London: Falmer.

Black, P.J. and William, D. (1998) 'Assessment and classroom learning', *Assessment in Education: Principles, Policy and Practice*, 5(1) pp.7-13.

Brace, I. (2008) *Questionnaire Design: how to plan, structure and write survey material for effective market research* (2nd Ed). London: Kogan Page.

Bransford, J. D., Brown, A. L. and Cocking, R. R. (2000). *How people learn: Brain, mind, experience, and school*. Washington, D.C.: National Academies Press.

Brewer, D.J. and McEwan, P.J. (Eds) (2010) *Economics of Education*. Elsevier: Oxford.

British Educational Research Association (2011) *Ethical Guidelines in Educational Research*. Available at: http://content.yudu.com/Library/A1t9gr/BERAEthicalGuideline/resources/index.htm?referrerUrl=http%25253A%25252F%25252Fwww.yudu.com%25252Fitem%25252Fdetails%25252F375952%25252FBERA-Ethical-Guidelines-2011. Accessed: 20 October 2013).

Brookhart, S. (2007). ‘Feedback that fits’, *Educational Leadership*, 65(4), 54–59.

Brown, D. (2012) ‘The Written Corrective Feedback Debate: Next Steps for Classroom Teachers and Practitioners’, *TESOL Quarterly*, 46(4) pp. 861-867. DOI: 10.1002/tesq.63

Bruno, I. and Santos, L. (2010) ‘Written comments as a form of feedback’, *Studies in Educational Evaluation*, 36 pp.111-120.

Butler, R. and Nisan, M. (1986) ‘Effects of No Feedback, Task-Related Comments, and Grades on Intrinsic Motivation and Performance’, *Journal of Educational Psychology*, 78(3) pp.210-216.

Butt, G. and Lance, A. (2005) ‘Secondary teacher workload and job satisfaction: do successful strategies for change exist?’, *Educational Management Administration Leadership,* 33(4) pp. 401-422. DOI: 10.1177/1741143205056304

Chin, C. (2006) ‘Classroom interaction in science: teacher questioning and feedback to student’s responses’, *International Journal of Science Education*, 28(11) pp.1315-1346.

Clarke, S. (2011) *Formative Assessment in the Secondary Classroom*. London: Hodder Murray.

Cross, L. J., & Cross, C. M. (1980) ‘Teachers' evaluative comments and pupil perception of control’ *Journal of Experimental Education,* 49, pp.68-71.

Deci, E. L. (1971). Effects of externally mediated rewards on intrinsic motivation. *Journal of Personality and Social Psychology*, 18, pp.105–115.

Deci, E. L., Koestner, R. and Ryan, R.M. (1999) ‘A Meta-Analytic Review of Experiments Examining the Effects of Extrinsic Rewards on Intrinsic Motivation’, *Psychological Bulletin*, 125(6) pp.627-668.

De Leeuw, E. (1992) *Data Quality in Mail, Telephone and Face-to-Face Surveys.* Amsterdam: TT Publications.

Department for Education (2014) *Teacher’s Workload Diary Survey 2013*. Available at: https://www.gov.uk/government/publications/teachers-workload-diary-survey-2013 (Accessed: 13th August 2016).

Department for Education (2015) *2010 to 2015 Government Policy: Education of disadvantaged children*. Available at: https://www.gov.uk/government/publications/2010-to-2015-government-policy-education-of-disadvantaged-children/2010-to-2015-

government-policy-education-of-disadvantaged-children (Accessed: 30th December 2015).

Driver, R., Asoko, H., Leach, J. and Scott, P. (1994) 'Constructing Scientific Knowledge in the Classroom', *Educational Researcher*, 23(7) 5-12. DOI: 10.3102/0013189X02300700

Dweck, C.S. and Elliot, A.J. (Eds) (2005) *Handbook of Competence and Motivation*. New York: Guiford Press.

Dweck, C.S. (2006) *Mindset: The New Psychology of Success*. New York: Random House.

Education Endowment Fund (EEF) (2015) *Teaching and Learning Toolkit*. Available at: https://educationendowmentfoundation.org.uk/toolkit/toolkit-a-z/ (Accessed: 30th December 2015).

Emmett, K., Klaasen, K. and Eijkelhof, H. (2009) 'Fast Feedback in Classroom Practice', *Physics Education*, 44(3) pp.246-252.

Falchikov, N. and Boud, D. (1989) 'Student self-assessment in higher education: a meta-analysis', *Review of Educational Research,* 59(4) pp. 395-430. DOI: 10.3102/ 00346543059004395

Falchikov, N. (1995) 'Peer feedback marking: developing peer assessment', *Innovations in Education and Training International,* 32(2) pp.175-187. DOI: 10.1080/1355800950320212.

Ferris, D.R. (2011) *Treatment of error in second language student writing* (2nd Ed) Ann Arbor: University of Michigan Press.

Greenstein, L. (2010) *What Teachers Really Need to Know About Formative Assessment*. New York: ASCD.

Harks, B., Rakoczy, K., Hattie, J., Besser, M. and Klieme, E. (2014) 'The effects of feedback on achievement and self-evaluation: the role feedback's perceived usefulness', *Educational Psychology*, 34(3) pp.269-290. DOI: 10.1080/01443410.2013.785384

Hattie, J. and Timperley, H. (2007), 'The power of feedback', *Review of Educational Research*, 77(1) pp.81-112.

Havnes, A., Smith, K., Dysthe, O. and Ludvigsen, K. (2012) 'Formative assessment and feedback: making learning visible', *Studies in Educational Evaluation*, 38 pp.21-27.

Hyland, F. and Hyland, K. (2001) 'Sugaring the pill: praise and criticism in written feedback', *Journal of Second Language Writing*, 10(3) pp.185-212. DOI: 10.1016/S1060-3743(01)00038-8

Javonen, J. (1997) *Social motivation: Understanding of children's school adjustment.* Cambridge: Cambridge University Press.

Kahn, S.D. and Weiss, J. *The teaching of affective responses*. In Travers, R. M. W. (Ed.) (1973), *Second handbook of research on teaching.* Chicago: Rand McNally, 1973.

Kolb, D.A. (1984) *Experiential Learning – experience as a source of learning and development*. New Jersey: Prentice Hall.

Kluger, A.N. and DeNisi, A. (1996) 'The effects of feedback interventions on performance: a historical review, a meta-analysis and a preliminary feedback intervention theory', *Psychological Bulletin*, 119 pp.254-284.

Kumar, R. (2014) *Research Methodology: A step-by-step guide for beginners (4th Ed.).* London: Sage.

Lam, S., Yim, P. and Ng, Y. (2008) 'Is effort praise motivational? The role of beliefs in the effort-ability relationship', *Contemporary Educational Psychology,* 33(4) pp. 694-710. DOI: 10.1016/j.cedpsych.2008.01.005

Lang, R. and Page, S. (2011) 'Benefits of Teacher Collaboration Across Varying Stages of the Research Process', *Intervention in School and Clinic,* 46(4) pp.230-234. DOI: 10.1177/1053451210389031

Lassonde, C.A. (2008) *Current Issues in Teacher Education: History, Perspectives and Implications*. Illinois: Charles C. Thomas.

Lassonde, C.A. and Israel, S.E. (2010) *Teacher Collaboration for Professional Learning*. San Francisco: Jossey-Bass.

Leonard, D.C. (2002) *Learning Theories*. Connecticut: Greenwood Publishers.

Lodico, M.G, Spaulding, D.T. and Voegtle, K.H. (2010) *Methods in Educational Research: from theory to practice,* (2nd Ed.). San Francisco: Jossey Bass

Mangal, S.K. and Mangal, S. (2013) *Research Methodology in Behavioural Science*. Delhi: PHI Learning.

Martin, A.J. (2002) 'Motivation and Academic Resilience: Developing a Model for Student Enhancement', *Australian Journal of Education,* 46 pp.34-49.

McBurney, D.H. and White, T.L. (2009) *Research Methods*, 8th Ed. California: Wadsworth.

McMillan, J.H. (1977) 'The effect of effort and feedback on the formation of student attitudes', *American Education Research Journal,* 14(3) pp. 317-330. DOI: 10.3102/00028312014003317

McNicholl, J. (2013) 'Relational agency and teacher development: a CHAT analysis of a collaborative professional inquiry project with biology teachers', *European Journal of Teacher Education*, 36(2) pp. 218-232, DOI: 10.1080/02619768.2012.686992

Midgley, W., Davies, A., Oliver, M.E. and Danaher, P.A. (Eds) (2014)

Mitchell, M.L. and Jolley, J.M. (2013) *Research Methods Explained* (8th Ed.). Belmont, CA.: Wadsworth. *Echoes: Ethics and Issues of Voice in Educational Research*. Rotterdam: Sense Publishers.

Mueller, C.M. and Dweck, C.S. (1998) 'Praise for intelligence can undermine motivation and performance', *Journal of Personality and Social Psychology*, 75 pp.33-52.

Natriello, G. (1987) 'The impact of evaluation processes on students', *Educational Psychologists*, 22(2) pp.155-175.

Nicholls, J.G. (1978) 'The development of the concept of effort and ability, perception of academic attainment and the understanding that difficult tasks require more ability', *Child Development*, 49(3) pp.800-814.

Niiya, Y., Crocker, J. and Bartmess, E.M. (2004) 'From vulnerability to resilience: Learning orientations buffer contingent self-esteem from failure', *Psychological Science*, 15(12) pp.801-805. DOI: 10.1111/j.0956-7976.2004.00759.x

Office for Standards in Education (OFSTED) (2011) *Making Marking Matter: St Marylebone Church of England School*. London: The Stationary Office.

Office for Standards in Education (OFSTED) (2015) *School Inspection Handbook*, London: The Stationary Office.

Osborne, J., Simon, S., Christodolou, A., Howell-Richardson, C. and Richardson, K. (2012) 'Learning to Argue: A study of four schools and their attempt to develop the use

of argumentation as a common instructional practice and its impact on students', *Journal of Research in Science Teaching,* 50(3) pp. 315-347.

Owen, H. (2003) *Dreamcrafting: The Art of Dreaming Big, the Science of Making it Happen.* San Francisco: Barrett-Koehler.

Page, E. B. (1958) 'Teacher comments and student performance: A seventy-four classroom experiment in school motivation' *Journal of Educational Psychology*, 49**,** pp.173- 181.

Paton, G. (2014) Teachers told: spend less time marking books to cut excessive workload, *Telegraph* [Online] Available at: http://www.telegraph.co.uk/education/educationnews/11177766/Teachers-told-spend-less-time-marking-books-to-cut-excessive-workload.html (Accessed: 29th March 2015).

Pintrich, P.R. (1990) 'Implications of the psychological research on student learning and college teaching for teacher education'. In R Houston (Ed) *The handbook of research on teacher education*. Pp826-857. New York: Macmillan.

Pintrich, P.R., Cross, D.R., Kozma, R.B. and McKeachie, W.J. (1986) 'Instructional Psychology', *Annual Review of Psychology*, 37 pp. 611-651.

Phye, G. D. and Sanders, C. E. (1994). 'Advice and feedback: Elements of practice for problem solving', *Contemporary Educational Psychology*, 79(3) pp.286-301.

Quinton, S. and Smallbone, T. (2010) 'Feeding forward: using feedback to promote student reflection and learning – a teaching model', *Innovations in Education and Teaching International,* 47(1) pp.125-135. DOI: 10.1080/14703290903525911

Roth, K.J., Garnier, H.E., Chen, C., Lemmens, M., Schwille, K. and Wickler, N.I.Z. (2011) 'Videobased Lesson Analysis: Effective science PD for teacher and student learning', *Journal of Research in Science Teaching,* 48(2) pp.117-148. DOI: 10.1002/tea.20408

Satterly, D. (1981) *Assessment in Schools*. London: Blackwell.

Schunck, D.H. and Meece, J.L. (1992) *Student Perceptions in the Classroom.* London: Routledge.

Shufflebeam, D.L. and Coryn, C.L.S. (2014) *Evaluation Theory, Models and Applications*. London: Wiley.

Shute, V. J., (2008). 'Focus on formative feedback', *Review of Educational Research*, 78 pp.153–189.

Stewart, L. G., and White, M. A. (1976) 'Teacher comments, letter grades and student performance: What do we really know?' *Journal of Educational Psychology*, 68, pp.488-500.

Swinton, O.H. (2010) 'The effect of effort-grading on learning', *Economics of Education Review*, 29(6) pp.1176-1182. DOI: 10.1016/j.econedurev.2010.06.014

Tanner, H. and Jones, S. (2005) *Marking and Assessment*. Continuum: London.

Torrance, H. (2007) 'Assessment as learning? How the use of explicit learning objectives, assessment criteria and feedback in post-secondary education and training can come to dominate learning. *Assessment in Education: Principles, Policy and Practice,* 14(3) pp.281-294.

Voerman, L., Meijer, P.C., Korthagen, F.A.J., Simons, R.J. (2012) 'Types and frequencies of feedback interventions in classroom interaction in secondary education', *Teaching and Teacher Education*, 28 pp.1107-1115.

Williams, S. E. (1997). 'Teachers' written comments and students' responses: A socially constructed interaction.' *Paper presented at the annual meeting of the conference on college composition and communication.* Phoenix, AZ.

Wilshaw, M. (2014) *Speech to Association of School and College Leaders.* Available at: https://www.gov.uk/government/speeches/sir-michael-wilshaws-speech-to-ascl-conference. (Accessed: 13th August 2016)

Yandell, J. (2016) *The Social Construction of Meaning*. London: Routledge.

Yang, C. (2007) 'Social class differences in parental education expectations: the relationship between parent's social status and their expectations for children's education', *Frontiers of Education in China*, 2(4) pp. 568-578. DOI: 10.1007/s11516-007-0042-7

Yeager, D.S. and Dweck, C.S. (2012) 'Mindsets that promote resilience: when students believe that personal characteristics can be developed', *Educational Pschologist*, 47(4) pp.302-314. DOI: 10.1080/00461520.2012.722805

Appendix 2 – CUREC Approval

Application Approval

Title: Praising the Process: Does Effort-Graded Feedback Improve Outcomes in the Classroom?

The above application has been considered on behalf of the Departmental Research Ethics Committee (DREC) in accordance with the procedures laid down by the University for ethical approval of all research involving human participants.

I am pleased to inform you that, on the basis of the information provided to DREC, the proposed research has been judged as meeting appropriate ethical standards, and accordingly, approval has been granted.

If your research involves participants whose ability to give free and informed consent is in question (this includes those under 18 and vulnerable adults), then it is advisable to read the following NSPCC professional reporting requirements for cases of suspected abuse
http://www.nspcc.org.uk/globalassets/documents/information-service/factsheet-child-abuse-reporting-requirements-professionals.pdf
Should there be any subsequent changes to the project which raise ethical issues not covered in the original application you should submit details to research.office@education.ox.ac.uk for consideration.

Appendix 3 – CUREC Letter to Principal

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School: *Omitted for anonymity*

Principal: *Omitted for anonymity*

I am writing to enquire about conducting research in school this academic year. As you know, I am studying for the Master's in Learning and teaching at Oxford University, supervised by Dr. Ann Childs. In my final research project, '*Praising the Process: Does Effort-Graded Feedback Improve Outcomes in the Classroom*', I will explore the effect of providing an effort-grade, in conjunction with standard constructive feedback methods, on student work.

The research will take place with two Year 10 science. The provision of high-quality written feedback is of particular interest to me and I will extend my previous research by exploring how a focus on effort can improve motivation, attainment and success. I will take a particular focus on whether praising the process, as opposed to the learning outcome, will enable a narrowing of the existing attainment gap in classrooms. *[Teachers omitted for anonymity]* have agreed to collaborate with me on this.

By participating in the research, the school would be contributing to a project that will deepen the department's understanding of supporting progress in the science classroom whilst also providing findings that are applicable to all teachers in the school, regarding successful feedback methods and the provision of equity in the classroom.

I hope to conduct this research between 1st January 2016 and 1st July 2016. This allows for several cycles of the research to be conducting, and continued refinement of the procedure based on student and teacher feedback. I would conduct questionnaires for students to complete, in order to assess their motivation and attainment and audio-record student interviews to deepen my understanding of the issues presented. Samples of student work may be photocopied for use in the research report.

Oxford University has strict ethical procedures on conducting ethical research with teachers and young people, consistent with current British Educational Research Association guidelines. As practitioner research however, the University recognises that schools have the highest ethical standards in any event. Therefore only your consent is necessary, and not that of parents. Throughout the research, students and other teachers will be able to refuse to participate in any research activities at any time.

All participants, including students, teacher and the school, would be made anonymous in all research reports. The data collected would be kept strictly confidential, available only to my supervisor and myself, and not used other than specified without further consent. All tapes would be destroyed at the end of the research period, and kept in locked conditions until then.

If you feel you would like to take part in the study, or need more information about what is involved, please contact me.

I look forward to hearing from you.

Yours sincerely,

Researcher: *Omitted for anonymity*

……

'*Praising the Process: Does Effort-Graded Feedback Improve Outcomes in the Classroom*'

Researcher: *Omitted for anonymity*

University of Oxford, Department of Education

School: *Omitted for anonymity*

Principal: *Omitted for anonymity*

- ☐ We do not wish to participate in this project.
- ☐ We would like to find out more about this project.
- ☐ We would like to take part in this project.

If you would like further information, please contact me, or my supervisor. If you require clarification of the ethical approval, process please contact Chair of Department of Education Research Ethics Committee, Dr Nigel Fancourt.

Supervisor email: *ann.childs@education.ox.ac.uk*

Chair of Department of Education Research Ethics Committee, Dr Nigel Fancourt email: nigel.fancourt@education.ox.ac.uk

Appendix 4 - Pre and Post-Intervention Questionnaire

Feedback Effectiveness Questionnaire

1. What type of feedback do you **most frequently** receive on your work? (Please tick one)

Written only	Grade only	Written and grade	Verbal	Other (please state how)

2. How often do you receive a **grade** on your work? (Please tick one)

1 – Never	2 – Rarely	3 – Most of the time	4 – All of the time

3. How useful is written feedback in helping you to **make progress** and improve? (Please tick one)

1 – Not useful	2 – Rarely useful	3 – Mostly useful	4 – Always useful

4. Give a reason for your answer to question 3.

5. How often would you use and **respond** to written feedback? (Please tick one)

1 – Never	2 – Rarely	3 – Most of the time	4 – All of the time

6. Give a reason for your answer to question 5.

7. How often do you receive feedback on how **previous targets** have been improved upon? (Please tick one)

1 – Never	2 – Rarely	3 – Most of the time	4 – All of the time

8. How do you feel that feedback on how **previous targets** have been improved upon affects your **progress**?

Appendix 5 - Pre-Intervention Interview Responses

Question 1: Do you prefer feedback with a written comment only or a grade and written comment? Why?

Student No.	Response
1 'Imaan'	**I prefer to get a grade otherwise I don't know how I'm really doing.**
2 'Michael'	**Yeah, written comments are ok but grades show me if I'm on track and what the comments mean.**
3 'Shakera'	**I think both are good. We get grades in our reports, but it can be a surprise if we don't get grades in feedback.**
4 'Abdullah'	**In some other lessons we get grades a lot and that helps me know if I'm working hard enough.** Interviewer: What would you do if your grade was high? **I'd relax a bit if I know I'm working hard enough.**
5 'Katie'	**We always get a comment and I think they're useful if it's actually really about me.** Interviewer: Can you give an example? **In English I get a comment that is always just about me, but in some other subjects my comment is usually really similar to other people's.**
6 'Finlay'	**Yeah and I think I know that grades are always about me and nobody else.**

Question 2: Why does written feedback not always help you to make progress?

Student No.	Response
1 'Imaan'	**The grade makes me work harder if it's not good enough.**
2 'Michael'	**I don't always know what the target means or how to do it better.**
3 'Shakera'	**I actually think it's not knowing what I needed to do before I give work in that is the problem.**
4 'Abdullah'	**Like if you hand in work and it's got bad feedback, every time there's new work, there's different things I'd have to do well and it changes all the time.** Interviewer: What would be better? **Having one set of things that I should make sure I do each time.**
5 'Katie'	**Yeah there wouldn't be surprises then! Sometimes our target isn't important in the next task so I can't work on it.** Interviewer: Can you give an example? **In science we get targets, like to improve drawing lines of best fit. I did work on that but never got another comment about whether I was better or not.**

6 'Finlay'	**I think targets do help but yeah, maybe getting to work on it for longer would help.**

Question 3: What affects your motivation to use and respond to feedback?

Student No.	Response
1 'Imaan'	**If I get a good comment, then it makes me feel better so I work harder.** Interviewer: What do you mean 'better'? **Like, I feel like I'm doing better so I try harder.**
2 'Michael'	**If I can see I'm getting better, I suppose. Sometimes I can't so I think 'what's the point?'.** Interviewer: Can you give an example? **In Science we used to get a grade on how we wrote predictions. Then every time I wrote one, I could go back and see if I got a higher score, and why.**
3 'Shakera'	**I do try to answer them and sometimes look back in my book. I look back at old grades and see if I'm better or not. I'll try harder then!**
4 'Abdullah'	**Yeah I want to see that I'm getting better at one thing.** Interviewer: Can you give an example? **We used to get a comment in English that also said how good our effort was. That used to make me want to work harder on my work to try and get better comments about my effort.**
5 'Katie'	**We need time to answer it. Sometimes we don't and then I kind of give up.**
6 'Finlay'	**Yeah and I know the comment is always going to be more negative than positive, even if I try really hard.**

Question 4: Why is it helpful to your progress to review old targets?

Student No.	Response
1 'Imaan'	**I think it's good when they follow on from each other, so I can see there's a point in doing better.**
2 'Michael'	**If we don't I just don't see what the point is, because nobody tells me if I've done better at it or not. I can't always work it out for myself.**
3 'Shakera'	**Maybe our targets change because we've got better at the last one, maybe that's why they change.**
4 'Abdullah'	**Like I said, I look back at old grades to see if I'm doing better or not, same thing with my normal feedback.**
5 'Katie'	**To be honest I don't really bother answering it if it keeps changing all the time, it's too much to work on.**
6 'Finlay'	**But in some lessons we get this sheet with all our feedback on that we keep going back to, that's easy to see when I'm getting better.** Interviewer: Is that just comments or grades too?

	Both really, we get one grade a few times a year that we can compare.

Question 5: How would a grade help you to judge your progress better?

Student No.	Response
1 'Imaan'	**I think that if we don't have a grade there's no point giving us a grade in our reports because it's always a surprise.**
2 'Michael'	**Yeah if it's the same grade all the time then I can compare it.**
3 'Shakera'	**I don't think grades on tests are that good, because each test is different and if I found that unit harder then I'll get a worse grade. It doesn't mean I'm really getting worse at biology.** Interviewer: Can you give an example of when grades are useful? **When we practice coursework, I can see if I'm better at each area by comparing the grade. It doesn't really matter what the topic is because the skills are always the same.**
4 'Abdullah'	**I agree with Imaan. I can't compare it to before or to other people very well.**
5 'Katie'	**Yeah like teachers say 'don't compare it to other people', but I always do, it helps me know if I'm doing well enough or who's doing different things that are good.**
6 'Finlay'	**And in our reports, we get these grades for class work and homework, I don't know where that comes from, we never get told that. They should tell us so we know about can do better.**

Key

	Group 1 (Higher)
	Group 2 (Middle)
	Group 3 (Lower)

Appendix 6 – Post-Intervention Interview Responses

Question 1: How has having an effort grade in your feedback affected your progress?

Student No.	Response
1 'Imaan'	**Yeah, I can see that I got better as it went on.** Interviewer: How could you see? **My grade got better, I started off quite low and at the end it was higher.**
2 'Michael'	**But, mine was a 5 on the first bit of work that I did.** Interviewer: What did you do when you got a 5 first time? **Well to be fair, I could have got a 6! So I read the feedback and looked back at the work to see what I missed.**
3 'Shakera'	**Mine definitely got better – I started on a 2 for my first grade and then got better up to a 5!**
4 'Abdullah'	**Yeah, I agree with Michael. But also, it's not like you could just ignore it because the next piece could be worse so I wanted to know why I'd got a good grade so that I could carry on doing it.**
5 'Katie'	**I think I did make progress – like I know I put more effort in once I knew how, but I think I actually did get better at biology. The last test we did I was more confident.**
6 'Finlay'	**Yeah, I thought I was rubbish at biology but probably just didn't try very hard!**

Question 2: Why do you think that effort grades have changed the progress that you feel you are making?

Student No.	Response
1 'Imaan'	**Yeah I agree with Michael – sometimes we do a topic that I don't understand and I used to just not bother too much with it. But for the last test I actually put more effort into revising it properly.** Interviewer: Why did you decide to put more effort in? **Well, I suppose I realised that I wasn't putting in enough and that was the reason it was hard. Not just because it was a stupid topic!**
2 'Michael'	**I think I thought I was ok and good before. So I didn't bother too much – I put time into other subjects!**
3 'Shakera'	**Also I think I felt like I was doing better so I wanted to try and do even better.**
4 'Abdullah'	**I think I wasn't working very hard to start with. I didn't get the subject. But at the end I put more time in to my work.**
5 'Katie'	**I work harder in lessons now.** Interviewer: Even though you didn't get an effort grade for class work? **Yeah, I just knew that I probably wasn't, from seeing my homework grade at the start.**
6 'Finlay'	**I definitely did more homework – that's probably got something to do with it!**

Question 3: How has having an effort grade affected your motivation in class?

Student No.	Response
1 'Imaan'	I always liked science and was ok at it, but I definitely worked harder.
2 'Michael'	Yeah – you used to tell me to challenge myself more all the time if we had a traffic light task, but you haven't said it for a while!
3 'Shakera'	I think I just started to know that if I tried a bit harder, I could actually do pretty well. Rather than just getting C's and being ok. Interviewer: But when you did get your 5, didn't it make you think about just giving up trying to get better from there? No! Because the next bit of work could be a 1 again!
4 'Abdullah'	I don't know how, I just enjoy the subject and want to do better.
5 'Katie'	Yeah and if I get stuck now I just ask for help – I guess that's better effort too?
6 'Finlay'	Like I said, I started actually doing my homework! Interviewer: What made you want to start? I wanted to see if I could improve my grade!

Question 4: Have effort grades changed the way that you read the written comments in your feedback?

Student No.	Response
1 'Imaan'	I still read the comments, so that hasn't changed.
2 'Michael'	I understand it better now – I didn't get the targets before but they make sense because I know that I didn't do something I could have done.
3 'Shakera'	I don't know, I probably read them more now! I used to skip them to be honest!
4 'Abdullah'	Yeah, like if there were massive targets then it'd take ages to achieve it and then I'd have forgotten it anyway by then!
5 'Katie'	I read the 'Strength' bit more too – sometimes you knew other people had the same thing they'd done well. But because it's my score I know it's pretty much just my thing.
6 'Finlay'	More personal, yeah.

Question 5: Has having an effort grade changed the way that you look back and review old feedback?

Student No.	Response
1 'Imaan'	Yeah I get competitive now to get better grades! Interviewer: Competitive with who? Me! My grade from before. I remember what it is and want to beat it.
2 'Michael'	But once as well we did two similar writing homeworks, so even though it was a bit different, the old feedback still had a target I needed to remember.
3 'Shakera'	I get a bit competitive with other people too but it doesn't mean that much really. Like, if they got a 2 and you got a 4, they probably did things that you didn't so you it's not the same…you can't compare it with other people.
4 'Abdullah'	It just makes sense looking at the score. There's less writing so I can understand what it means and can be bothered to read it!
5 'Katie'	Yeah and I showed my mom the other day – she wanted to see my book and didn't believe that I was doing ok. She saw back at the start where I was low and then high at the end.
6 'Finlay'	Yeah and mine! My dad did the same thing.

Key

	Group 1 (Higher)
	Group 2 (Middle)
	Group 3 (Lower)

Appendix 7: Teacher Discussion 1

(9th January 2016)

T1: What are the barriers to students being able to use this tool easily?

T2: I think their understanding of the tool is important. It is different to what they are used to. If they aren't sure how to use it, then it could take a while for them to get their self-assessment right.

T1: My worry would be that it could take some time for them to get this right. I don't know how well they will be able to understand it to begin with.

T1: How do we approach the introduction to make sure that they understand well from the start?

T2: We need to coach them through it – maybe with an exemplar piece of work?

T1: I agree – if we show them the tool and just talk it through, they are likely to misinterpret their role. If we go through it step-by-step, then that could work better.

T2: We also need to think about how well they will understand each of the criteria. We think that they are clear, but if they don't understand what we mean, they might either just leave that box blank or else tick it without really understanding what it requires. This would skew the results from the start.

T1: You're right, and the initial time that the tool is used will be important for baseline results.

T2: Are there any criteria in particular that we expect to be difficult?

T1: I think for me it's presentation – we know that standards of presentation can be low and they may underestimate what they need to do to achieve this point.

T2: I think though that this will be our judgement – the thing about this tool is that it is subjective for each student; those that present poorly will have put more effort in if their work is presented better. Even though that presentation may not be perfect.

T1: You're right! We will need to keep in mind that this is not outcome-based grading. It is purely about the process and effort. I think that will be clear in our first sharing of practice, to see how each other has interpreted this.

T2: What about homework completion? We know their completion can be poor. How do we manage poor submission of homework with this?

T1: Well this is an essential marker of motivation and engagement – if they fail to complete homework as they might usually, then we know that the tool is not improving motivation as well as we might expect.

T2: Yes, you're right.

Appendix 8: Teacher Discussion 2

(1st March 2016)

T1: How have you found the effort-graded tool so far?

T2: I've found it quite straightforward to use. I did explain it to the students but they understood it quickly and seemed quite interested in the effort grade part of it.

T1: I've found the same actually, it was quite easy to explain and I was surprised that they did understand it so quickly as it can be a bit confusing as it goes back and forward a few times.

T1: How did the students handle the feedback the first time that you did it?

T2: They needed some coaching! They handed in the homework piece I set them on explaining the carbon cycle and I gave each of them a sheet which they filled in there and then. I made the mistake of not getting them to stick it in straight away, so some of the sheets were loose which could be a problem in the future if they fall out of the books completely. I took the books in, gave my feedback and then they used the 10 minutes to respond to my comments in the next lesson.

T1: Did you find 10 minutes was the right length of time?

T2: Yes, some of them were pushed to research their task and answer it, but more would not have been productive. I would usually give them 10 minutes so they are used to it.

T2: How did you find their effort-grade assessments?

T1: Interesting! The first time they did it, they weren't very accurate at all. They over-estimated the effort that they put it quite a lot. The main bit they over-estimated on was 'answering the task fully' and 'presenting neatly'. One student rated themselves as a tick for neat presentation, but the piece was obviously written in a rush and I think to allow that as good effort would undermine what they could achieve. I rated them as a cross. I wrote a comment about why I agreed or disagreed and that seemed to help. We're on the 3rd piece now and they have improved.

T2: I found my students were similar – they were overly generous on their own assessments to start with but it was new to them!

T1: Have you got any examples of where it has worked well?

T2: I had a really interesting conversation with Jasmine last week about one of her pieces of work; she has tended to plateau on the detail of her work and just hasn't produced homework to the standard she is capable of.

T1: So she is underachieving?

T2: Most of the time, yes. Especially with homework. She rated herself quite highly to start with and I obviously marked her down on her effort. She didn't understand why and I explained it to her. Her overall score was 2 but this week she has come back and improved it to a 4 with even some research going in. She is generally a bit demotivated – she pulls good test results out of the bag so I think has coasted for a while thinking she is working hard enough.

T1: I had a similar thing with Jamie. He doesn't seem very motivated by standard feedback but he was really keen to find out why I rated his effort the way I did. He also came up to me after our last lesson to ask where he should look on the internet for extra research if he got stuck!.

T1: Have you found any problems with the tool so far?

T2: I think, as you said, there are a couple of criteria that the students are struggling to understand fully. But I actually think the reason for this is that they just don't get what effort really is yet. I heard a few students talking about effort with each other and they were suggesting that some were able to put more effort in than others, because they were cleverer!

T1: I agree. For me it would be the two that I mentioned on 'answering the task fully', and 'presenting neatly'. Certainly, what the students might think is neat is not necessarily what we would think. If they are going to improve their effort, they need to understand reality of what is expected.

Appendix 9: Teacher Discussion 3

(1st March 2016)

T1: How has the second feedback tool been working?

T2: It is definitely better than the first – the criteria are a bit more specific and the students have started to be able to understand why they are or aren't achieving each point.

T1: I agree. They've been more realistic with their self-assessment of their effort.

T2: And I think that they've stopped over-estimating their effort now.

T1: Have you found that their assessment is more accurate? In my lessons the students are starting to match my assessment more closely. If anything they are under-estimating their effort.

T2: No I've found the same. It's much more accurate and I don't notice such a sense of over-confidence. They are much more realistic and that has made it easier to be able to encourage them to keep improving through the comments. But there have been a couple that have started underestimating their effort for me too.

T1: Do you have any examples of this?

T2: One that springs to mind is Tom. We know that isn't the most able in science and I think he used his effort as an excuse for that. He rates himself low for effort and I think, in his mind, that has always been his reasoning – he could achieve more highly if he had the motivation and effort. But he's using the feedback and is actually starting to be more accurate with his assessment and matching mine. It's a small shift but for him that's quite a big thing.

T1: What have you noticed about their engagement with their feedback?

T2: It has definitely increased. I think homework completion is a good indicator – they are completing their homework much more than before and that's without having to threaten any sanctions. But they are more willingly responding to feedback too; they get their sheet back and read through it straight away.

T1: And I've found that they straight away go back to their book to look at the grade and feedback before.

T2: Yes! One thing that cropped up this week when I gave feedback out – Josh looked back and was actually quite frustrated with himself that he hadn't managed to improve on this one part – it was completing the whole task that he struggled with last time. But it was just his attitude of caring that he hadn't done it as well as he could that struck me.

T1: What do you think about attainment and progress? Has there been any impact?

T2: Well it's difficult to say – I think I'll know more once they've done their next assessment. But just form seeing them, I can't see how it can't have improved. They are completing more homework and the quality of the work has improved. I think whether that translates to understanding is harder to be sure of, but I can't see how it can be doing anything other than making them better.

T1: I've found the same – I think I find it hard to believe that it isn't having an impact. Even when you look through their book, the quality of work goes through a transition of getting better. But actually in quite a short space of time. If you go back over the past year, there is little change in the quality of work but it suddenly does change.

T2: I'd be interested to see what the AP reports show – I know it's hard to take too much from it, but there are improvements. I think for me they just haven't realised before that effort is a big part of achieving anyway.

T1: Yes, and they're going through this shift at the moment where they are starting to realise that their success is in their hands – if they want to do better, they can. That's quite a hard thing to learn.