

KS3 Lesson Study: Does differentiation promote student engagement?

	Targed/Target	Yr hyn yr wyf wedi'i wneud yn yr aseiniad hwn. What I have done in this assignment.
Targed/Target 1	Continue to engage with a wide range of relevant literature to inform and build your personal viewpoint.	I engaged with a wide range of varying literature to inform decisions made through the research project. Rather than just using articles and books, I used other sources too, such as blog posts.
Targed/Target 2	Build upon your ability to propose solutions and apply them to complex problems which arise in practice.	When evaluating the lesson studies, I made some appropriate suggestions that helped in the improvement of the lessons, which was based on my own views that were informed by relevant literature.
Targed/Target 3	Engage with other documents such as LNF and DCF in more detail to support your future practice.	I felt this target was not relevant to this assignment because the focus was on differentiation, not LNF or DCF. However, I have read the LNF and DCF in more detail, and for my Electives experience the focus is LNF.

Aim, focus and purpose of the research

When preparing for the lesson studies and this research project, the area that was decided to be investigated was differentiation. Specifically, how differentiation impacts learner's engagement in a lesson. This was selected because there was the interest to see if differentiated tasks allowed all learners in a lesson to work in their zone of proximal development (ZPD), ensuring that there would be a good blend of challenge and accessibility. Additionally, this is something that Vygotsky (1978) suggested is beneficial to learners. Although one of the classes studied was mixed ability and the other was set, there was still a range of abilities in both classes, so there was a sense of curiosity to see how differentiation affects different contexts.

Research context

The classes used for the research were a mixed ability year 7 science class in School A and a set year 8 mathematics class in School B. According to Estyn (2013), School A is an English-medium 11-18 school in which approximately 10% of learners are entitled to free school meals and roughly 11% having a special education need. Estyn (2019) says that School B is also an English-medium 11-18 school, but only has around 4% of learners eligible for free school meals and about 8% with a special education need. The question initially used as the focus for the lesson study was 'KS3 Lesson Study: Does differentiation promote student engagement, progress and attainment?', where there was the pre-empted belief that students are more able to focus on tasks if it is tailored to their ability.

Short overview of relevant literature

To make light of the decisions made in planning the lesson studies, some literature had been considered, with a specific focus on literature related to differentiation in the classroom. This literature was then used to refine the question to be used as the basis of the research.

There is a common perception that differentiation leads to higher engagement. Anstee (2011) says that differentiating within a classroom should be focused on the learners and what they learn; the benefit of this is that they are likely to engage with the lesson and reach their full potential. This could mean that differentiation benefits all learners and it also opposes the idea of a 'one size fits all' lesson, as all learners are different. It could also help create lifelong learners, as is the intention of Donaldson (2015) through the 'Successful

Futures' curriculum. Tharby (2014) opposes the idea of differentiation slightly in the sense that it should not be forced into the lesson because the general expectation is that all lessons need to be differentiated. This may mean that differentiation for the learners is not essential, or that lessons should sometimes be differentiated by outcome rather than tasks, so learners can engage with the content at their own pace instead. Dweck (2006) also emphasises how important it is for learners to struggle on tasks to develop resilience and develop a growth mindset, an idea which is also shared by Barton (2018). Taking this stance might mean that the learners are not engaged for the first few lessons, but if it is done consistently it may benefit engagement of the learners in the long run because learners should be more willing to think more profoundly about the problems they are facing rather than just going straight for the teacher for help, thus potentially also impacting positively on attainment and progress.

To effectively differentiate within the classroom, it is important to know the learners well and understand their individual needs. Bouhuis (2013) found that teachers who differentiate successfully know their class well and are constantly assessing the knowledge and understanding of the learners to adapt the way they differentiate and tailor it to the specific learners. The continuous adaptation of the differentiation could lead to a boost in engagement of the learners as it allows the teacher to be more aware of how the learners work under certain circumstances, thus meaning they can modify the lesson so it is in a form that learners can work in greatest conditions. However, a limitation here may be that the teacher does not necessarily know their class' needs as well as they think, as learners do not essentially show how they are feeling about the work on the surface.

Differentiation by task is frequently used, with a red, amber, green (RAG) approach often adopted. Wendt, Foley and Kerr (2013) found that use of RAG questions helped with the engagement of some disruptive learners, meaning that they were answering more and, therefore, learning more. AQA (2020) also says that RAG questions can enrich the classroom experience for mixed ability learners provided that tasks allow for progression, and that it is a technique that many skilled teachers use. Thus, this enhanced classroom experience could lead to higher engagement in the lesson on the learners' behalf. The idea of RAG questions is something that is, again, criticised by Tharby (2014), as he states that using questions of this form often lowers the expectations of learners. So, while the learners may be fully engaged with the content of the lesson, it does not mean for certain that they are learning a sufficient amount because they may be taking the easy way out of the lesson. This is something that Dabell (2019) agrees with, as he believes that learners are dishonest about their capabilities and are not the experts at evaluating their own understanding, so will

often go for simpler options or convince themselves that they have a more sound understanding than they actually do.

The importance of differentiation in the classroom appears to be rooted in the fact that learners are less willing to work if they do not understand. Eursery (2016) says that to be able to differentiate effectively a teacher must be able to be prepared and flexible towards any unpredictable events, and the gap between frustration and success will close as a result of this flexibility. This creates the implication that learners who are frustrated with the content of the lesson are more likely to become disengaged, so combating this frustration may mean that learners will be more willing to engage with the content of the lesson. A limitation of this though, noted by Mills (2016), is that differentiation is not necessarily a solution that meets the needs of all learners, regardless of how well the teacher knows the class and how well they can adapt the lesson. This may then lead to a lower standard of lessons due to the shared focus of differentiated tasks, rather than making one really strong task.

The literature considered was useful in having a deeper understanding of differentiation. It appeared as though differentiation has many benefits in a classroom environment because all learners can work to their specific ability. Despite this, it also helped in developing an awareness of the limitations of differentiation and the ways in which differentiation is done in an ineffective manner, so these were considered too. This literature helped in supporting the basis of this research project. It also assisted in refining the research question to be 'KS3 Lesson Study: Does differentiation promote student engagement?' because the scope for progress and attainment in addition to engagement seemed far too wide after considering the literature.

Explanation of the lesson study design

The methodology behind this research project is highly grounded on the research that was conducted by Dudley (2014) on lesson studies and his belief that learning takes place over time, rather than being a one-off occurrence. Also, it is based on Dudley's belief that lesson studies can be used to adapt lessons to better support learning. Bracken, S. and Oliveira (2019) additionally say that lesson studies are useful because the cycle of reflection, planning collaboratively, action and reflection created a sense of mindfulness among everyone involved with lesson studies about how distinct learners respond to gaps there may be in their knowledge, how they generate knowledge and how they use their knowledge within and beyond real and virtual learning environments.

The two researchers undertook a non-participant observation over the period of two planned lessons. The observer had no direct influence on the lesson through their observation, instead taking on a more passive role in the lesson, as outlined by Hammersley (2015). For both lessons, the non-participant observer recorded how engaged the child was when doing the differentiated task. After the lesson, three learners of varying attainment (higher, middle and lower attainment) were selected to be interviewed as a group. They had to answer questions related to the differentiated tasks and outline their feelings towards them, and the non-participant observer made the transition into a participant observer, which Kumar (2011) states is when the observer takes part in the activities of the group that is being observed. This seemed like an appropriate event to occur because it gave a better understanding of how the learners felt about the lesson, which allowed the lesson to then be adapted to best fit their needs. However, it was decided also that the learners questioned would either have to be known to be sensible to ensure they gave dependable responses, or that there should be an awareness of a lack of sensibility to consider the responses carefully. It is also important to note that the observer knowing little about the class reduced the amount of observer bias, which as mentioned by Stephanie (2016), is when the observer displays a predisposition to see what they want to see, rather than what is actually happening. With no or little knowledge of the group the observer was observing, they had no subjective feelings about the learners that were being observed.

During the observation, the engagement of the learners was measured using a model that has been adapted from the Leuven Scales as described by Lewis (N.D.), with a focus on engagement rather than wellbeing and involvement (see Appendix A). This was used because the descriptors are useful in that the observer can fully focus on what they are seeing in the lesson.

Following the conclusion of the interviews, the lesson was reflected on by both researchers using the reflective model that has been created (see Appendix A). The reflective model is a slightly modified version of the reflective model that Gibbs (1988) created, and it involves the researcher who taught the lesson giving their thoughts and feelings about the lesson. There are six paragraph questions for the researcher to use as a basis for the reflection; it involves both descriptive reflection and reflection that involves deeper thinking about the events and responses in and to the lesson. It seems to be a reliable form of reflection because it has prompts that enable getting the most out of reflecting on the lesson studies.

It is important to note that the data collected from this research was qualitative data, which McLeod (2019) says is research of an empirical form, rather than a numerical form. Qualitative data was used due to the fact that the events of the lesson, learner's responses

and reflections allow for interpretation to aid in improving the lesson, whereas numbers would be more difficult to analyse if quantitative data was used.

The tasks used in the lesson were differentiated based on different levels of difficulty using red, amber and green questions (see Appendix B and Appendix C), which is something that Wendt, Foley and Kerr (2013) found particularly useful in their own lesson studies. The learners that were selected to be the focus of the lesson studies received the task that was most appropriate for them, ensuring the range of difficulties and capabilities were covered for the interview and reflection process.

Lesson one was taught by one researcher, and then the observer took a passive role and observed and recorded the level of engagement. Then both researchers took part in the group interview and reflection. In lesson two, the roles were reversed where the observer became the teacher and vice versa. The success of varying differentiated tasks was also measured at the end of each lesson. Based on the notable success or failures of the tasks, the differentiated tasks were adapted for the second lesson study at planning stage. Again, for the second lesson study, the researchers interviewed the learners as a group and later reflected upon the lesson to see if the changes made led to any improvements from the first lesson study and to identify any further improvements that could be made to the lesson and differentiated sheets.

Consent forms were given out at least two weeks in advance to learners and parents or guardians to ensure that there is good ethical practice and to give them the option to withdraw at any time (see Appendix A). It also allowed parents or guardians to have time to understand what the lesson studies were about, and if it was appropriate for the learner they care for. Additionally, further assent was asked of the three learners that were selected to be observed and interviewed.

Ethical considerations

To conduct the research in the school, there were several ethical considerations to make, and these were made during the completion of the ethics form (see Ethics Form Submission). In following the BERA (2018) guidelines both schools involved in the study remained anonymous, as did the identity of all learners who participated. Because the learners who took part in the lesson were under eighteen, there was also the need to get their assent and the consent from their parents, hence having to send out consent forms (see Appendix A). Any data collected from the study has been kept in a locked cupboard, to avoid unauthorised people accessing the information. Furthermore, when the research is

completed and written up, all information related to the school and learners will be destroyed due to the unethical impact that could occur as a result of the information reaching people who have had not had permission to see it.

Lesson study 1 results and analysis

In the first lesson study, the learners achieved the goals of the lesson through their completion of differentiated sheets which they completed after being exposed to a new topic for the first time. The learners could select the sheet they wished to work on based on how they felt about their own capability, and every learner was able to answer all questions on the sheet they picked.

After some direct teaching to introduce the new topic, the three learners that were the focus of the lesson study, say Student A, Student B and Student C, chose different levels of difficulty when they selected their sheets. Their levels of engagement with the task were observed, and it was perceived that there was only a slight variation of engagement between the three learners. Student A, who chose the most difficult sheet, and Student B, who chose the middle sheet, were identified to have 'periods of prolonged intense engagement' (see Appendix D). Student C, who selected the easiest sheet to work on, was 'regularly not engaged' (see Appendix D). However, it is important to note that Student C's initial engagement was good, but this gradually worsened throughout the completion of the task. Nevertheless, all three learners were able to complete the questions on the sheets to a good amount of detail.

When asked about how the three selected learners felt about the lesson, they all agreed that it was an interesting lesson and, in particular, noted how much they liked the freedom of being able to choose what sheet they answered. Additionally, all three learners were able to identify at least one new thing they learned in the lesson (see Appendix D).

Student A identified that the task was quite challenging but said that they enjoyed the challenge (see Appendix D). This could mean that the learner picked the most difficult sheet to provide themselves with the challenge because they wanted to push themselves to learn and has a growth mindset attitude to learning, as Dweck (2006) suggests that anything is achievable with a positive attitude and determination. This learner was 'fully engaged' with the task, so although they believed the task to be a challenge the level of engagement and the fact that they were able to complete the task without help suggests that they were working in their ZPD, again relating back to Vygotsky (1978). Student B believed the task was a good blend of difficulty, with a little bit of challenge (See Appendix D), and their level

of engagement again creates the implication that they were working in their ZPD. Student C, however, was quick to say how easy the task was (see Appendix D). This may be because they have a fixed mindset, so do not have they belief in themselves try a challenge, or it could be because they wanted to choose the easiest option because they thought it would be less effort. Unlike Student A and Student B, Student C did not appear to be working in their ZPD, which gives the impression that they needed to complete a more difficult sheet that involved them thinking more deeply about the task.

Upon reflection, the lesson seemed like a success for the most part because learners showed good levels of engagement and progress in the lesson (see Appendix D). It was noted though that approximately 35% of the class chose the easiest task, even though there were learners that could have challenged themselves further (see Appendix D). As discussed about Student C, this could be due to numerous reasons, such as the fixed mindset or the want to put a lack of effort into the task among other whys and wherefores.

Apart from Student C, the learners were engaged and through this engagement they were able to reach meet the learning objectives of the lesson successfully. So, the immediate cause for action is to ensure that nobody chooses a task that is too easy or too difficult for them, allowing them to be working in their ZPD consistently. The way of improving the lesson and avoiding the occurrence of this again was thought about carefully; use a task before the main differentiated sheet to determine which sheet each pupil completes, e.g. the score they get determines the difficulty of the main sheet. It was identified that this should lead to the avoidance of learners having a sheet that is pitched to the wrong ability for them. Also, some learners made the suggestion to have a longer task, with more questions (see Appendix D). So, to combat this, the differentiated sheet was created to have more questions to answer.

Lesson study 2 results and analysis

Like the first lesson study, the use of three different sheets formed the main task, each a different level of difficulty. However, in the second lesson study the learners were not allowed to choose their own sheet. Instead, they had to do a quiz prior to the main task that determined which sheet they were to complete in the lesson.

Again, three learners were selected to be the attention of this lesson study. Student A had to complete the easiest sheet, Student B and Student C were to complete the medium difficulty sheet. As before, their levels of engagement with the sheets was observed. Student A was identified to be 'generally engaged', while Student B and Student C were seen to

have 'periods of prolonged intense engagement' (see Appendix E). The sheets that the learners had to complete had a lot of questions on them, as it was adapted based on the feedback from the learners in the first lesson study. None of the learners finished all of the questions, but they made steady progress and were able to get every question they answered correct with a decent amount of engagement toward the task. The good level of engagement in the lesson from all three learners suggests that they were working in their ZPD.

When asked about the lesson, all the learners said that they enjoyed the task, which explains their levels of engagement. However, it seemed as though the tasks were not correctly suited to each of the learners' needs, with all three learners saying the task was either too easy or too challenging (see Appendix E). All three learners also stated that they would have liked to spend more time on the worksheet (see Appendix E).

Student A said that they found the task easy but enjoyed the fact that it was easy (see Appendix E). It could be the case that this learner actually had a sheet that was the appropriate difficulty for them and that they made a good amount of progress in the lesson, as their engagement suggests that they were able to focus well on the task. Equally, it may have been the case that this learner had an inaccurate score on the quiz that determined which sheet they should answer but was still able to access and engage with the sheet. Student B felt as though the sheet was challenging but helped them learn well (see Appendix E). This creates the impression that this learner had the most appropriate sheet for them because they identified that there was a significant level of challenge but was committed to completing the sheet and they were fully engaged with the task. Similar to Student A, Student C noted that they enjoyed the task but found it too simple (see Appendix E). Again, this learner was fully engaged with the task, so it might have been the case that they had made good progress in the lesson rather than the task being too easy for them. But it also may have been the case that the quiz had determined the wrong sheet for them.

When reflecting on the lesson, the engagement of the learners was noted to be the strong positive point of the lesson (see Appendix E). It was agreed that the task to determine which worksheet the learners should have was a good idea but could use some slight adjustment. A point of reflection was that differentiation to this extent works better in a mixed ability class than it does in a set class (see Appendix E), as setting is already a form of differentiation in itself. Also, like the learners, it was noted that more time needed to be spent on the main task (see Appendix E). It is also important to note at this point that the full range of abilities were not questioned, just the lower and middle ability in the class, which may

have had an impact on the responses received about the lesson and the feelings felt towards the lesson.

When discussing ways to improve this lesson, the most immediate thing documented to change was the task that determines which sheet the learner completes for the main task. It appeared that it should be something more representative of the main task to make it a more accurate way of gauging the level which the learners should be working at. Also, as recognised by the learners in the interview questions and during the lesson reflection, more time needed to be spent on the main worksheets (see Appendix E). So, to further improve the lesson, more time needs to be factored in during the lesson planning phase to spend on the differentiated worksheets.

Discussion of research findings in relation to related literature and research

Looking back to the literature that has been discussed previously, there are some interesting discoveries from the lesson studies. For example, Anstee (2011) said that differentiation has a positive impact on the engagement of learners, and this was found to be the case (see Appendix D and Appendix E). This creates the impression that differentiation should be used in lessons if engagement of learners is a priority, and also slightly opposes the ideas that Tharby (2014), Dweck (2006) and Barton (2018) put forward in the sense that struggling was more important to create resilience, as the learners were engaged and made progress in the lesson studies but still noted that there was some challenge to assist them in developing resilience (see Appendix D and Appendix E).

Due to the fact that RAG questions were used in both lesson studies, the research has also confirmed the idea that Wendt, Foley and Kerr (2013) put forward. To illustrate this, some of the six learners that were picked to be observed across the two lesson studies were known to be relatively disruptive in lessons but displayed high levels of engagement when working through their selected RAG sheets (see Appendix D and Appendix E). Also, it further reinforced what AQA (2020) said about the positive effect RAG questions have on engagement in a mixed ability class because the class observed for the first lesson study were mixed ability and their engagement levels were mostly high (see Appendix D). It was also found, however, that what Dabell (2016) said about learners being untrue to themselves when selecting sheets was true, as in the first lesson study reflection there was surprise at the number of learners that picked the easiest sheet (see Appendix D). This was adjusted for

the next lesson study based on both the literature considered and the findings of the first lesson study.

The lesson studies seemed to confirm what both Eursery (2016) and Mills (2016) said about differentiation in the classroom as the majority of learners seemed to appreciate the tailored nature of the lesson through their engagement, but it may not have been suited to Student C in the first lesson, as they were on the lower end of the engagement scale (see Appendix D). But this also may mean that the lesson needed to be tailored even further, as Bouhuis (2013) said that to differentiate effectively the teacher must know the learners well, so it could be the case that the teacher needed to find out more about Student C's needs to differentiate in an appropriate manner for them. This could also suggest that being able to fit a lesson to every learner's individual needs is almost impossible. It seems to be the case that differentiation benefits the majority of learners though, so this creates the impression that differentiation should be used regularly in lessons.

Conclusion

This research project has had a number of successes, but areas for improvement have also been identified.

The research lessons were both successful in the sense that the differentiated sheets were created to a good standard and everything was planned to a good amount of detail (see Appendix B and Appendix C). This led to the lessons running smoothly so the focus of the research question could really be honed in on. Also, both lessons were structured quite similarly, so this allowed the differentiated sheets to be the main focus of the lesson study.

As the model used for collecting data was based on that of the Leuven Scales, it was felt that it was a reliable way of collecting data. It was effective because it involved little writing, meaning that the observer could focus solely on what they were observing. It also had descriptors, so the observer knew what events they had to look out for (see Appendix A). This led to further focus as the observer did not have to worry about thinking about what was and what was not important to observe. The use of non-participant observation mentioned by Hammersley (2015) was also a success because it allowed the observer to see what the learners were like in their natural learning environment, thus meaning that the area for research could be used to inform future practice accurately as the learners responses were unbiased.

There were some limitations to the lesson study. Firstly, one class was a mixed ability year 7 class and the other was a set year 8 class, which is already a form of differentiation in itself. This may mean that the results of the lesson studies were not accurate, as these are two different contexts. Differentiation may have affected these classes in very different ways that may not have been obvious on the surface. Additionally, one lesson was a science lesson, while the other was a maths lesson, which created difficulty in planning the lessons so that they were similar enough to have adjustments made after they were taught. This again may mean that the results were not accurate because differentiation can take different forms in different subject areas.

Another limitation was how the 'interviews' were conducted. They were used more so as a questionnaire than an interview, which meant that the answers were not in as much detail as anticipated because the learners could not be probed with further questions to elaborate on what they meant with certain responses. This then created difficulty during the analysis of the lesson studies because it was not always clear what the learners intended to say and some of the responses were not in-depth (see Appendix D and Appendix E). It also meant that improving the lesson was more difficult because it was not necessarily clear what the learners believed would benefit them the most, and it was tough to interpret their true feelings towards the lessons.

Generally, the lesson studies seemed to show that differentiation in the classroom has a positive impact on engagement, which answers the research question. This is evident by the fact that all but one of the learners selected to be the focus of the observation were on the higher end of the engagement scale used for the observations (see Appendix D and Appendix E). So, this all suggests that differentiation, specifically use of differentiated worksheets, should be used in the classroom if there is the want to boost the engagement of learners. The method used to differentiate seems to be reliable, due to the fact that it is discussed in literature, such as that of Wendt, Foley and Kerr (2013). It is, however, important to note that this may not have been due to the differentiation; it could potentially have been because the topics were ones that the learners enjoyed, which led to their high engagement. Regardless of this though, from this study it was found that differentiation benefits the engagement of learners in both mixed ability classes and set classes.

Recommendations

Moving forward with the lesson studies, it seems as though if they are to be repeated it would be more appropriate and more effective if they were done in the same form of ability

classes, such as set classes, and if they were conducted in the same subject area. This is because the lesson can be planned collaboratively to a greater extent, the results can be analysed more in-depth and accurately and there can be more focus of differentiating specific subject content, rather than differentiating in a general form. When using a task to determine which differentiated worksheet the learners should complete, it may be a good idea to use a task that is more representative of the main task to ensure that all learners are working from the sheet that is the most appropriate level of difficulty for them. Also, when there are differentiated worksheets with a significant number of questions to answer, it is crucial to give enough time for the learners to digest the content of the sheet and work through them, which was not the case during these lesson studies. A final recommendation is to ensure that the interviews are actually conducted as interviews rather than questionnaires. This should ensure that the responses from the learners are in-depth and focused on the differentiated tasks, meaning the alterations of the lessons should be easier to make as it provides a better understanding of the needs of the learners.

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