

ECAD 7004 : Researching the Learning: what, how and why am I teaching?

A Lesson study – Does the provision of differentiation by task have a positive impact on the amount of engagement a pupil has with a lesson.

	Targed/Target	Yr hyn yr wyf wedi'i wneud yn yr aseiniad hwn. What I have done in this assignment.
Targed/Target 1	Check the use of sentence structure	Proof read over assignment a number of times to avoid any grammar and spelling errors
Targed/Target 2	Improve upon the use of referencing within your critical reflection	Avoided the use of 'Literature states' as suggested in feedback.
Targed/Target 3		

Teaching in a mixed ability setting provides unique challenges in which one needs to be prepared for. This can create the risk for our day-to-day teaching activities to become isolated from the broader goals potentially leading to inconsistencies in development of courses. Therefore, there is a strong need for teachers to experience high quality professional development in order to improve student learning and development and teacher instruction. In order to assess these challenges, a lesson study was conducted to familiarise myself with the needs and attitudes of pupils towards learning.

Due to the mixed ability setting, the issue that interested me was differentiation and pupil engagement. This was an obvious choice, as there is a large variation in the ability of the pupils in the school of this research study and the need to differentiate within the lessons is of pivotal importance in order for every pupil to access the curriculum. The question 'Does the provision of differentiation by task have an impact on the amount of pupil engagement in the classroom?' led way to the lesson study to be carried out focusing on the independent thinking, engagement and the rise in the amount of work completed. The lesson study in question will also focus on teachers' professional development in a lesson study team through collaboration, improvement and reflection.

Lesson study describes a professional learning process in which teachers collaboratively plan, deliver, observe and discuss lessons that have a particular pedagogical focus which are often 'difficult' aspects of learning for a particular group of pupils (Bush, 2009). Even though the approach is to observe the outcomes of the pupils activity, the process forces the teachers to consider their teaching method activating their

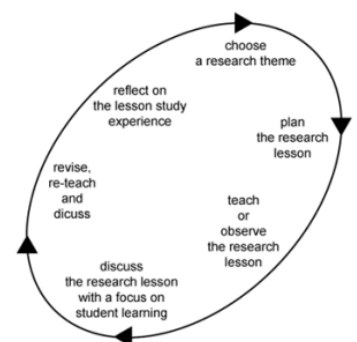


Figure 1: The Lesson Study cycle

professional development. Teachers who engage in a lesson study undergo a cycle of activity, a cycle in which is shown in Figure 1 (Stepanek et al., 2007).

Lesson study originates from Japan, where it is a leading approach for teachers' professional development. A lesson study helps teachers to shift their pedagogical practices to 'teach for understanding' rather than 'teach as telling' which is reflected through longitudinal investigation of Japanese education where the teachers intensely studied and shared during the lessons. (Lewis, 2000). Lewis believes that the process of lesson study has the potential to support teachers' professional development by creating a learning environment that encourages the collaboration with peers and engagement in self-reflection practices through analysing student learning.

Following the success attributed to lesson study by US researchers in its achievement in developing deep pedagogical knowledge and subject knowledge amongst Japanese teachers, lesson study has only started to become a popular approach used in the west this century. This was due to the high standards of educational attainment of Japanese pupils compared to their US counterparts (Stigler and Hiebert, 1999). Lesson study has now been successfully used in the UK to improve teaching practices and pupil progress in both primary and secondary settings and to develop pedagogical practices such as a variety of Assessment for Learning techniques (Bush, 2009). Bush recognises that lesson study is good value for money if the opportunity is taken for the outcomes to feed into the teaching practices involved in the study and others in the school.

At first glance, there are a number of challenges that one would expect to see in lesson study research all of which will be encountered at some point during research projects. Lesson study requires time for teachers to meet and having flexible

timetables to be able to plan, watch each other teach and reflect on their practices (Fernandez, 2002). However, the fact that we are now witnessing the increase in the number of lesson study initiatives within schools is an indication that teachers see lesson study as an important aspect and are finding the time to have a conversation about this. Fernandez also recognises that teachers find it difficult working collaboratively as working in isolation is the norm. Despite this, these teachers have found motivation in engaging and the sharing of lessons, working collaboratively with others reinforcing the changing culture of schools and the teachers that work in them. Finally, teachers may have little subject knowledge in the lesson that they are observing which can make collaborative lesson planning difficult amongst peers. These deficiencies can lead to the planning of lessons that are unsound and the misconceptions can lead to the question as to why we do lesson study. This challenge can be seen in the lesson study that has been carried out in this instance with the collaborative teachers working at alternative ends of the curriculum. It would be that of bad practice to implement lesson study in schools on the basis that it is widely used and successful in Japanese Education. Instead, we must look to theory to provide a rationale for why we are promoting guidelines and suggestions on a particular method. The social constructivist theory looks to the nature of knowledge and the belief that knowledge is structured through social interaction and is a shared experience (Vygotsky, 1978). Thus, in relation to lesson study social constructivism suggests that knowledge is constructed in response to interactions through negotiations, reflections and explanations supporting the idea that teachers should be engaged in activities that require communication verbally with experts. At all levels of education, diversity and differentiation within the classrooms is now a given. It is one of the biggest challenges that educators face in order to respond to

the needs of all students in such mixed ability classrooms. The lack of ability to be able to cope with the different work levels in different ways will lead to negative school outcomes, therefore differentiation of teaching and learning helps address this problem by respecting and responding to the needs of each learner (Katzi, Tsolaki, Meletiou-Mavrotheris and Koutselini, 2013). Differentiation is about giving access and lead to an end to dependency with the variety of abilities being seen as an asset to the classroom and not a problem.

Models of differentiation are based on collaboration between children with different styles and strengths and are not focused on the hierarchy of abilities. McNamara and Moreton (2016) states types of differentiation; differentiation by classroom organisation, differentiation by outcome and differentiation by task. Differentiation by task teaches children to help each other by reaching the targets set and teaching each other to improve their work by carefully structured peer tutoring. With this type of differentiation seeing a beginning of children deciding for themselves what they need to learn in order to achieve this influenced the decision for the topic of the lesson study. Looking further into this, the researchers that these progressive approaches tend to be used with mixed ability groups usually involving children being seated in their ability groups, individual needs being the focus and the expectation that children will work at different rates and producing work varying in quality, reinforced the decision for the research and helped to refine the research question to 'Does the provision of differentiation by task have an impact on the amount of pupil engagement in the classroom?'.

Definitions of pupil engagement vary throughout and have changed over the years. Today it is frequently defined as pupils' cognitive investment and participations with learning in a particular context (Zepke and Leach, 2010). A limited amount of

research looks at engagement in regards to brain activity. The average classroom has a diverse range of learners from all different backgrounds so the 'one-size fits all' approach is no longer relevant as it ignores students who require different points of entry into the learning continuum. Learners at risk of being disengaged can be for many factors including family, health or behavioural issues but on the other hand highly able pupils are also at risk of disengagement (Education and Training, n.d). Therefore, differentiated teaching offers strategies to engage all ranges of students. The research support base for differentiated lessons and pupil engagement is not strong or extensive and the lack of research may stem from the fact that the idea of differentiated practices and engagement is too broad. Nevertheless, research carried out by Sousa and Tomlinson (2011) found that teachers are responding well to the differentiated approach to increase pupil engagement and an improved pupil satisfaction and increased academic performance has been reported. The researchers go on to state that educators believe that differentiated approaches are now an expectation for all teachers in the future and that it should now be employed by all schools. Due to the lack of research in this field, this influenced the decision greatly for the concept of this lesson study on the provision of differentiation by task and amount of pupil engagement.

The methodology used is lesson study research, which is a form of action research. Action research is a form of self-reflective enquiry which is undertaken by participants in social situations in order to improve their practices, take responsibility for their practices and have an understanding of the situation in which these practices are carried out (Carr and Kemmis, 1986) This form of research is grounded in the practical issues that teachers encounter in the everyday classroom. Within the framework, in relation to teachers and education, teachers are involved in

researching the relationship between their theories of learning, instruction and teaching in the classroom. Action research has been used successfully to help in particular pre-service teachers to help them cope with the demands of the everyday classroom and to confront and solve the core teaching problems that may occur (Scardamalia and Bereiter, 1989). Whilst the benefits cited above are important, one of the strongest benefits is the power given to teachers to inform their practice. The power of action research rests with the ongoing nature of professional development that is placed within classrooms and dealing with real problems.

The focus group participants were chosen through a method of sampling. Sampling is a method that allows for researchers to infer information about a certain population without having to gain information from the whole (Webster, 1985). In order for the research to be valid, the sample should be as representative of the whole population as possible. Three participants were chosen from each Year 7 class for the purpose of the lesson study. The case pupils reflected a range of abilities within the group of learners in the class. For example, pupils who are making good, average and below average progress in an aspect to be covered by the lesson. The type of sampling used is judgement sampling, a non-probability sampling technique where the researcher selects participants to be researched based on their existing knowledge and professional judgement (Foley, 2018). This sampling method was the most obvious to use in this case due to the context of the research in question. The question on how large a sample should be is questionable and can be determined by various constraints. Deciding on a sample size for qualitative inquiry can be more difficult than quantitative as there are no definitive rules to be followed. Depending on the purpose of the enquiry and what can be done with the available time and

resources will impact on the decision, however, if a suitable sampling strategy is used, then the sample should yield valid and reliable information (Mugo, 2002). The methods of data collection used are; non-participant observation, focus group interviews and reflection. Through observation notes, using a specifically designed observation grid, gathering qualitative data it was an acceptable form of data collection as it gains detailed and meaningful information through the qualitative research methods (Bogdan and Bilken, 1997). Bogdan and Bilken state that qualitative researchers go in to the particular setting in study and feel that an action can be understood best when it is observed in the setting that it actually occurs. In this study, it was pivotal that this qualitative approach was adopted in order to capture detailed research and it was the most appropriate method for the lesson study.

Non-participant observation, was used in this research and is one where the researcher does not play any part in what is being observed (Laurier, 2016). This allows for the researcher to have a more objective view of what is occurring in the research setting. There is a danger that participant observers can “go native” and take on the values of those that they are observing as they share each other’s experiences, however, you can argue that having these shared experiences can offer ‘verstehen’ (deeper understanding) in the research setting (Martin, 2018). Despite this, a disadvantage of most non-participant observation is the Hawthorne Effect, whereby people are likely to change their behaviour as they are aware that they are being observed. This could be overcome with covert observation, for example using CCTV, however this would raise a number of ethical concerns and would have been more difficult to get ethical consent.

Focus group interviews were to be conducted with the case study pupils. Interview questions were pre-prepared in order for the team of researchers in the lesson study to ask the same questions in order for the research to be able to be compared and reliable. When conducting interviews in any case, no two interviewers are alike and the same person being interviewed may provide different answers to different interviewers, known as the interviewer effect (Mugo, 2002). In support of the questions being pre-prepared, Mugo states that the manner of which a question is formulated can result in inaccurate responses and false data, therefore it is important that the questions are replicated in the lesson study interviews for valid research. On the other hand, the respondents might also give incorrect answers to impress the interviewer, the respondent effect. This type of error in research is the most difficult to prevent in data collection as it results from the out-right deceit of the person that is being interviewed (Mugo, 2002). In the case of this lesson study, great care must be taken when preparing the questions to design an interview that minimises this effect. The reflections were captured using a reflection model influenced by Gibbs reflective cycle. Gibbs' reflective cycle was developed in 1988 in order to give structure to learning from experiences and lends itself particularly well to repeated experiences (Gibbs, 1988) in the case of this; a lesson study. With the model covering 6 stages; description, feelings, evaluation, analysis, conclusion and action plan, it allows you to learn and plan from things that either went well or didn't go as planned. Whilst Gibbs' reflective cycle model offers a useful and basic way to help structure reflections, a more critical approach is needed in some lesson study in order to make informed decisions on what needs to be changed. Zeichner and Liston (1996) support this and argue that reflective teachers should move beyond questions on whether their

practice is working and focus on critically examining values and how practice can lead to change and respect for difference.

A considerable amount of ethical considerations need to be taken into account when carrying out research in the classroom. In order to carry out the lesson study, ethical approval needed to be gained by the University's Ethics Committee. It was essential that those taking part were given permission by parents to participate in the lesson study. Anonymity for participants was assured and is seen to be an integral feature for ethical research. The legal requirements of the Data Protection Act state that anonymity should be maintained wherever possible, hence, in the case of this lesson study the school and names of the participants remain anonymous. Despite this, the right to withdraw at any point in research is recognised throughout. It is argued that the right to withdraw should protect research participants from anything that may cause them harm or uncertainty (Schaefer and Wertheimer, 2010). In the case of this research participants were made aware of their right to do so in the consent form that was provided (See Appendices).

Following the BERA ethical guidelines (2018), it must be ensured that data collected is stored securely. For example, any electronic devices used must be password protected and no information should be sent via email or media that can be privately accessed. All information collected in the lesson study was stored on a password protected device with all hard copies being destroyed for confidentiality purposes. Lesson Study 1 was carried out in a mathematics class. The aim of the lesson was a revision lesson that had been previously studied over a number of lessons prior to an upcoming test. Pupils were required to work in pairs (set by teacher based on ability) in order to complete the work set in that lesson. The pupils were aware that they were being observed in this lesson, however, the class weren't made aware of

exactly who had been chosen for this lesson study to avoid any thoughts of personal bias. All pupils that were used in Lesson Study 1 were different range of abilities in order for the teacher to identify what level of differentiation needed to be done for each ability and if it did have an impact on the level of engagement.

Using the observation schedule that was produced beforehand, the observer made comments on each section in relation to each pupil. Pupil A was a high ability pupil who had been given the revision booklet that had no scaffolds in it and therefore was not differentiated to make it easier to get to the answers but yet made more difficult. The observation identified that Pupil A was confident in carrying out the task promptly and didn't need to ask any questions beforehand regarding the work that was set. In relation to Pupil A's level of engagement in the lesson, the observation highlighted that the pupil was on task all lesson and required an extension task, the pupil was not recorded to have been distracted from work at any point of the lesson reinforcing the high level of engagement with the lesson.

Pupil B was a middle ability pupil who had been given a differentiated revision booklet which consisted of having scaffolds in order to help answer the questions. Pupil B can often be quick to ask for help which was identified in the observation notes and can be distracted at many points of the lesson which can sometimes prove difficult in getting the Pupil back on task. Pupil B was found to confidently ask questions about the work and was eager to get the right answer working comfortably with their peer. Pupil B was also seen to be confident in giving answers in front of the class, again highlighting their engagement with the work set. However, the observation notes noted that there were points of off task talk from this pupil which may have been from lack of understanding or lack of motivation.

Finally, Pupil C was an Additional Learning Needs pupil (ALN) who's work is often not a true reflection of their ability. As well as being given a differentiated booklet with scaffolds they were also accompanied by a teaching assistant which helps the pupil to complete their work and keep on task. Through the observation the pupil was chosen to give answers in front of the class and was confident in doing so. The amount of work that was also completed was a significant amount more than what has been seen previously. As well as Pupil B, Pupil C did have some off task talk which is not unusual for this pupil, however, when given the right guidance and motivation, Pupil C was able to quickly get back on task.

When making reference to the Pupil engagement wheel (Stadkey, 2013) (see appendices), all pupils were shown to have a high level of engagement through questioning, giving answers confidently, pupils were out of their chairs for part of the lesson and given time to self-reflect. However, it seems unusual to be able to say that Pupil A had the same level of engagement with the lesson as Pupil B and C considering they were recorded to have off task talk. Also, when interviewing the pupils, the results that were given were seen to be highly positive. Pupils felt that they would like this approach to be taken in other classes as working with peers helps to motivate them in completing the work and those scaffolds that were provided gave them the confidence in being able to get to and share the correct answer with the rest of the class.

Upon reflection of Lesson Study 1 it was identified that more levels of differentiation by task could have been carried out. The false idea of 'one size fits all' was taken into account, however, there needs to be more of a distinction of whether every pupil required a different scaffold too. The overall feeling from this lesson was that there was a high level engagement due to the differentiated tasks as everyone was able to

access the work set, however, the amount of task talk due to the lesson being peer work may have been a bit overpowering for those who prefer to work individually, therefore it may be considered that this lesson would have been better and results on the amount of engagement would've been easier to identify on an individual basis if the work was to be done independently.

I also felt that some pupils felt uneasy about getting the certain levels of work. Some pupils wanted to have the more challenging work and were disheartened when they were provided that with the scaffolds as they were not aware that this was being given in order to benefit them. If this arose again I would already have put names on the revision booklets and given them out personally rather than the pupil coming and getting their own booklet at the front of the classroom. Although the questions in the booklet were essentially the same and everyone in the class would get the same answers, some pupils wanted the challenge.

Lesson Study 2 was carried out in a Year 7 History lesson. The topic of the lesson was identifying parts of a castle. The pupils that were being observed were 3 low ability pupils that often had low levels of engagement. Learning from the previous lesson on giving out the differentiated tasks subtly, the tasks were given out individually to those pupils and no pupils were aware of the different worksheets that had been provided. Through the observation it was identified that although a lot of the work was completed, questions were asked and answers were given, there was often a small amount of distraction and off task talk which was quickly stopped by the teacher. Overall, it was concluded that a full understanding of the lesson was reached as pupils were able to carry out the work quietly and independently at most points of the lesson.

Results from the engagement wheel on this occasion were interesting when comparing the results from the observation notes. When looking at the engagement wheel results for Pupils A and B, their engagement score was a lot higher than Pupil C, however, in the observation notes they were noted to have a lot more off task behaviour and distraction. This may have been due to the nature of the lesson or the fact that the observation method was not an accurate way of measuring the level of engagement, despite this it must be taken in to account that engagement is hard to measure and personal opinions on on task behaviour can take effect.

The findings of this study suggest that the lesson study process expresses the core features of professional pedagogical experiences that are identified by Bush (2009) that have significantly positive effects on teacher pedagogy. The on-going nature of the lesson study experience; collaborative planning, delivering, observing and discussing lessons that have a specific pedagogical focus, as highlighted by Bush, led to a process that forces teachers to consider their teaching method and their professional development that in this study has been proving to have an effect on the participants that will have a lasting impact on the pedagogical practices. The study also suggests the importance of differentiation of tasks in the process of guiding the participant to engage with the curriculum. These participants viewed this support as critical to the success of the lesson. With the appropriate amount of support through the differentiated tasks, the participants were eager to engage in the lesson and tackled the work with fervour. As discussed, the research by Katzi et. al (2013) reinforces the importance in respecting and responding to the needs of every pupil and acknowledging the differences in ability as an asset rather than a problem, and with the amount of completed work within the lesson due to the differentiated tasks a significant proportion of pupil engagement with the lesson can be seen.

Thus, the lesson and differentiated work responded to the needs of the pupils and the completion of the tasks being the strongest indicator that the provision of differentiation does have an impact on the amount of pupil engagement.

However, if the teaching practices within our schools are to be improved, then we must invest in these professional development activities at all times but remember that differentiation should be 'guides for understanding' and not 'teaching to tell' (Lewis, 2000). Typically, as teachers we model answers too much for pupils, therefore teachers must develop practices that allow pupils take control of their own learning at particular aspects of the lesson and be able to reflect on their own learning and understanding. Another limitation to the lesson study process that was confronted was the lack of flexible timetables between the collaborating researchers. With the planning of the lesson study, observations and reflections this can interfere with teaching schedules as acknowledged by Fernandez (2002). However, from the positive results of lesson study from this research as well previous research, lesson study is continuously being welcomed for development purposes. In addition, the positive findings of the provision of differentiation by task and the amount of pupil engagement will contribute to the lack of research that is currently available in this field.

Teaching in a mixed ability classes provides a challenge to all teachers in making sure all pupils are able to engage with the lesson effectively. Being able to formulate questions and provide differentiated tasks suitable for a range of abilities proves to be difficult for all teachers with a range of experience. The importance of using the correct data collection methods in this research is pivotal in gaining valid and reliable research.

The qualitative data obtained through the observation methods can be considered to be somewhat unreliable, and in any case, may lack validity, since the pupil engagement wheel and the data from the observation notes are seen to contradict each other on the amount of engagement each pupil had in the lesson. However, we can still obtain that there was an improved amount of pupil engagement due to the differentiated tasks as the amount of work completed and questions asked significantly increased compared to previous lessons. One solution to improving this method would be to make the pupil engagement wheel more specific to the class that are being observed and the lesson that is being taught. For instance, the engagement wheel says 'Students laughed out loud at something appropriate in class' a more appropriate suggestion for the engagement wheel would be 'Students were able to work independently without help on the task set'. This would highlight understanding of the lesson and what is expected of them and would reinforce engagement with the work set.

The lack of focus group participants for the teacher self-evaluation means that the research can be difficult to generalise to the population. Despite a range of abilities being acknowledged within the study, there are many ranges of abilities amongst pupils which need to be taken into consideration when making generalisations and considerations to teachers' pedagogical practices including those with Additional Learning Needs (ALN) which who's ability would be significantly different to those without an ALN. Although lesson study is considered to be research based on a small cohort of pupils, it would have been beneficial to carry out this research with a significantly larger number of pupils to see whether the provision of differentiation by task did in fact have a positive outcome on the amount of pupil engagement.

Finally, it would have been beneficial to carry out a pilot study in order to see what research methods worked and what ones didn't. As there were a number of contradictions between the observation notes and the 'engagement wheel' form of engagement measurement it would have been given an insight that these research methods together would not give a valid reflection of the success of the lesson. Efforts by teachers to make lesson study sustainable should therefore be mindful that in order to gain a true reflection and be accurately critical, that getting the right research methods to suit the research question is pivotal.

Moving forward in my teaching practice, I will take into consideration the many different abilities that a class may have in all year groups and ensure that many forms of differentiated tasks are made available for all pupils to access the work. It is essential to incorporate the pupils' opinions on lessons in order to gain a reflection of what went well and what didn't go so well to make improvements for the following lesson, something that I will ensure to do throughout my future teaching practices. After identifying that differentiation by task does in fact have an effect on the amount of engagement that a pupil has with the work, it would be useful to research in to other differentiation methods, for example, differentiation by outcome, in order to see if this too would improve the amount of engagement with the lesson. However, this may lead the child to feel isolated within the class by reaching a different point in the lesson so you must ensure that this is done as carefully and professionally as possible.

If I did this lesson study research again I would also carry out a pilot study beforehand. If this had been carried out, more effective methods of observation could have been used throughout the research leading to more detailed and generalizable answers. The engagement wheel should have been assessed before

carrying out the lesson study research to identify whether all aspects were relevant to the lesson and this is something moving forward when carrying out this research again I would make more personal to my lessons. This wheel of engagement would be useful for all teachers to use in their lessons as this could help with the writing of reports to share their opinions on the pupils' engagement based on a standardised scale.

With this lesson study stating that the provision of differentiation by task having a positive impact on the amount of engagement within a lesson, this will help build on the lack of lesson study research done on this field, taking in to account the recommendations made above. Sharing good practice is an ever growing phenomenon that teachers are now participating in and lesson study research is proving to be one of the most influential ways that teachers can reflect and make informed decisions on their pedagogical practices.

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