

Is the use of a multiple-choice group quiz as a plenary an effective method of assessment for learning?

	Target	What I have done in this assignment.
Target 1	Some minor errors in spelling - more of a typo but seen throughout. Overall, very well written.	I have thoroughly read through and attempted to remove all typos.
Target 2	Double check your spelling (Search *leaners in your next assignment and replace with *learners)	I did this and made sure there is no leaners.
Target 3	- Develop your engagement with literature and improve depth in use.	I have tried to read a wide range of literature, and use references from previous assignments in more depth.

Introduction

To be successful as a teacher, it is vital that one continually develops effective techniques and strategies throughout one's career. This begins during the professional teaching experience (PTE) which takes place during training. It consists of twenty-four weeks of what is effectively work experience within a school setting. The PTE is vital, as the training which occurs outside of the classroom can only educate teachers so far (Lewis *et al.*, 2012). It allows the trainee teacher to experiment with different strategies as well as learn from different strategies that fellow trainee teachers who are experiencing similar situations may have used. In fact, this collaboration between trainee teachers is encouraged and forms the basis of this report; a research project based on the lesson study methodology carried out by two trainee teachers during their PTE.

The aims of this study were as follows:

- To investigate, using the lesson study method, whether a group quiz can assess pupils learning & inform a teacher of an individual pupil's knowledge and understanding of a topic.
- To investigate whether a group activity gives a true reflection of the overall class understanding and not just a few individuals who answer for their peers.

The objectives of this study were as follows:

- Use the lesson study method to observe a lesson and gauge three pupils individual's knowledge and understanding during a lesson.
- Use a group quiz, based on the format of 'Who Wants to Be a Millionaire', as a plenary. The class will be divided into four groups, of which our chosen three pupils will be placed into different groups. Answers will be given as a group and the results of the three pupils' groups will be recorded.
- To interview the three pupils after the lesson, asking if they understood the lesson, and if they knew the answers to the quiz, or were relying on their peers.

Literature review

Assessment for learning (AFL) is a key professional skill that all teachers must develop and use effectively, not just incorporate into lesson plans for the sake of ticking a box as it is something they feel they must incorporate (Black & Wiliam, 2006). AFL is essential to pupil learning, supporting the learners' needs when used effectively (Gardner, 2012). Arguably, the most important use of AFL is to ensure that the teaching and learning do not get out of synchronism. Learners learn at different rates, and a teacher may assume knowledge that isn't there (Stefanakis & Meier, 2010). Although the new curriculum changes that are being put into place across Wales, recommended by Successful Futures (Donaldson, 2015), should help incorporate learning as a whole, it is unsure how much and if Wales will walk away completely from the traditional idea of school and exams. Therefore there is a large amount of learning that must be visited in the curriculum, and thus it is vital that all of this is covered so pupils are adequately prepared for assessments such as GCSE's and A – Levels, which are currently vital to move on and succeeded in life after school. AFL can ensure that pupils understand a topic fully before moving on to the next one, a constantly changing time scale which will depend on each group of learners, the topic itself and the teacher who delivers the material. Without AFL, those in the education profession would just have to guess or estimate this time scale, thus AFL makes the delivery of the learning much smoother and more efficient.

There are two main types of assessment: formative and summative. Formative assessment assesses learning continuously throughout a lesson or topic, whereas summative assessment only assesses the learning at the end of a particular time period such as a school term, a particular topic or school year (Bloom, 1969; Bennett, 2011). Both formative and summative methods of assessment must be utilised in the classroom to fully gauge learners understanding of a subject and thus fully aid their learning. Summative assessment is a more traditional method of assessment as exams have always been used in education as a way of measuring learners knowledge at key stages such as before transitions between key stages, and small exams at the end of the school year or terms, and then for formal exams at the end of a learner's time in education (GCSE's & A – levels). The problem with the approach of relying solely on summative assessment is that it may be too late to intervene and re-emphasise elements of the learning which have not been fully synthesised and understood by learners. This, however, is where the role of formative assessment is important. By its very nature, formative assessment would pick up on the areas of learning which learners are struggling with before they became a massive issue and mental block for them. A weak area of understanding can be repeated and focused on more than others thus making the learning more effective. Usually the learning aims for each lesson are examined at the end of the lesson to ensure every

learner is happy with the learning which occurred throughout the lesson in the form of a plenary (William, 2010).

Group work has been found to aid and improve the quality and effectiveness of AFL in the classroom (Welsh Assembly Government, 2010). Furthermore, group work links to one of the twelve pedagogical principles that the successful futures deemed essential for the new curriculum in Wales; good teaching and learning encourages collaboration (Donaldson, 2015). Nevertheless, group work, similarly to AFL, must not just be incorporated into lessons to essentially tick a box. The activities that learners partake in must be relevant to the learning and thus be engaging, suitable and accessible for all learners (Welsh Assembly Government, 2010). A careful balance is required to successfully achieve effective group work; the learners must be challenged; however, it must not limit any learners of a groups whose attainment may be lower than that of others in the group (Welsh Assembly Government, 2010). Group work fits the theory of 'teach less, learn more' which the teaching profession currently strives to achieve. The very nature of group work transfers the accountability of the teaching and learning process from the teacher to the learners themselves, as they simultaneously teach their peers and learn from each other (Freeman, 1995). The idea of learners taking over the teaching is a useful technique, as learners may explain a topic in a different way to the teacher, and one which a learner who is struggling with the topic may respond better to.

Lesson study design

Originating in Japan over a century ago, the use of a lesson study design to aid professional development in education has been adopted all over the world (Fernandez, 2002). The method incorporates pupils' voices and enables both teaching and learning to be improved (Warwick *et al.*, 2018; Elliot, 2019). A lesson study is based around two teachers working together to investigate a particular question or theory which will enable them to develop professionally (Dudley & Vrikki, 2019). The question or theory investigated focuses on just one particular element regarding the curriculum, teaching or learning experience. Professionally (Dudley & Vrikki, 2019) The two researchers (the teachers) plan a lesson either featuring a particular practice they wish to investigate or a lesson which will simulate an environment whereby they can observe a particular aspect of pupil learning (Dudley *et al.*, 2016). One of the researchers then teaches the lesson planned by both whilst the other observes, this is then reflected on and a subsequent lesson is focused on implementing their findings from the prior lesson (Dudley *et al.*, 2016). The roles of the researchers are then swapped for the second lesson, the observer becomes the teacher and vice versa (Dudley *et al.*, 2016). The lessons are

observed by focusing on three particular learners and observing their actions only, rather than the class as a whole. These three learners are then interviewed in an informal group at the end of the lesson by both researchers. This is an informal interview, although there are set questions, and if something arises in conversation it can be followed through (Dudley *et al.*, 2016). It is essential that the first lesson is reflected upon before the planning of the second begins. The reflection is usually structured in a way that is decided prior to the teaching and allows the researchers to fully analyse how the element of interest that they are investigating has worked, and how it could be improved upon for the subsequent lesson (Dudley *et al.*, 2016). Using a lesson study improves the quality of teaching as well as improving students' learning, although arguably it is impossible to have one without the other (Lewis *et al.*, 2012). Nevertheless, the lesson study aids teachers' understanding of subject knowledge, cross curricular knowledge if collaboration crosses the departmental barriers, and teaching techniques. It has therefore been proposed that a more structured approach for teachers to continuously collaborate should be put into place (Lewis *et al.*, 2012).

This investigation employed the use of the lesson study methodology to investigate if a multiple-choice group quiz as a plenary is an effective method of AFL. This was achieved by the teaching of a normally planned lesson, and then a quiz at the end of the lesson. The quiz was fifteen questions long, and there were seven groups of four pupils. One of each of the observed three pupils were placed in different groups. The rest of the groups were chosen at random depending on where their seats were in the classroom. The quiz consisted of questions which tested the knowledge of the lesson aims. The results of the quiz were recorded. The three pupils were also observed for their perceived understanding using an observation checklist (appendix 1); how eagerly they started any set work, how engaged they were with the teacher's instructions, how quickly they completed the work and if they moved onto extension tasks etc. After the lesson, the three pupils were interviewed to gauge their understanding of the lesson and how successful they felt the group quiz was (appendix 2).

The research participants who took part in this study were identified as they attend the school where the PTE was taking place and were part of the classes taught by the trainee teachers who conducted the research. Within these classes, the three pupils who were observed and then interviewed were chosen at random. An observation checklist was designed to be used during the observation to aid note taking (appendix 1). This consisted of behaviours to look out for in the three learners partaking in the study, as well as space for additional notes. These notes were then reflected on using the Assisted Reflective Conclusions Model (ARC)

(appendix 3) in hindsight (Schön, 1978). Self-reflection is vital as it allows teachers critically evaluate techniques used, thus allowing them to develop professionally (Jackson, 2019).

Due to the nature of this study taking place in a school and the participants being students, there were ethical considerations that had to be weighed. A full ethics form was submitted and approved by the University of Wales, Trinity St David's ethics committee (appendix 4). The ethical considerations considered related to the participants of the study which in this case were the learners, the researchers, the trainee teachers, and university as the organisation overseeing the entire process. Consent was gained from the school in which the research took place which will be referred to as school X, in order to maintain anonymity as recommended by British Educational Research Association (BERA) guidelines, 2018. Moreover, the three learners who took part in each lesson study will be referred to as learner 1, 2 and 3. Parental consent was gained with the use of an information sheet and consent form (appendix 5) and an age appropriate information sheet (appendix 6) was issued to each student taking part and information about the study presented such that they can make informed judgement to take part or not. It was made very clear that all data collected would be anonymous and not be able to be traced back to individual pupils. Furthermore, it was also made clear to all participants that they could withdraw from the study at any point and they would not be forced to complete it.

Lesson study 1 results and analysis

The first lesson which took place and was observed was a French lesson, to a year 8, band A class. The three pupils were observed, and the quiz results recorded (appendix 7), and the three pupils interviewed after the lesson (appendix 8). All three of the groups with the observed pupils got all the questions correct apart from one occasion by one group (appendix 7). This showed that all three of the pupils observed understood the entire concept of the lesson and achieved the aims. However, when speaking to the pupils after the lesson in the interview, two out of the three of them described their understanding of the lesson as amber (appendix 8), not as green, which would have been expected if they completely understood the lesson.. Furthermore, during the course of the lesson when the three pupils were being observed, only one of the pupils completed the work eagerly without much distraction from other stimuli in the room (appendix 7), this was also the pupil who described their understand of the lesson as green, and stated there was nothing that they would need to cover again, they were entirely happy with the content of the lesson and thus ready to move on with the topic (appendix 8).

Conversely, the other two pupils stated that they would like to go over the content again, especially the theory which was covered at the start of the lesson (appendix 8), which is when they were observed being distracted and talking with their peers rather than listening to the teacher (appendix 7) which is perhaps why they might need to repeat the material from the lesson.

The results from the group quiz conducted in this lesson do not correspond with the feedback that was received in the group interview; the quiz results suggested full understanding whereas when interviewed two pupils did not have the full understanding of the lesson which was shown in the quiz. This therefore suggests that a group quiz is not the best method of AFL to show understanding in each and every pupil in a class. Nevertheless, all three pupils stated that they enjoyed group work, knew the answers in the quiz and contributed those to the group (appendix 8), suggesting that perhaps it was the way the quiz was designed that may have been the problem in not representing the understanding of all the pupils in the group.. If the questions in the quiz did not cover the entirety of the lesson and each aim, or if the answers were too easy as it was a multiple choice quiz, then full marks could be achieved without a complete understanding of the lesson as a whole.

With this in mind when designing the quiz for the next lesson, it was ensured that the questions covered a range of material from the lesson. Moreover, half of the questions in the quiz were based on that lesson alone, and half covered content from the entire topic so far, so what had been covered in lessons for approximately the last four weeks. This was done to see if what could be perceived as an 'easy' quiz was responsible for the results shown in the first lesson that group multiple choice quizzes are not an effective method of AFL when measuring each pupil understanding.

Lesson study 2 results and analysis

The second observed lesson was a science lesson which was given to a year seven, band A class. Again, following the lesson study methodology, three pupils were observed throughout the lesson, and then interviewed at the end. There was a multiple-choice group quiz, with each of the three pupils placed in different groups, however, the quiz in this lesson was partly about the content of the lesson and partly about the topic as a whole.

All three of the groups containing the three pupils got two questions incorrect out of the possible fifteen, but these were not necessarily the same questions as each other (appendix 9). This supported information recorded in the group interview (appendix 10), as two out of the three pupils stated their understanding of that lesson and the topic as amber, and the other pupil stated it as green. This was also reinforced when they were asked if there was anything they would like to go over again in the lesson, and they all answered 'no'. Rather than that they would need to go over the facts given at the start of the topic as they were struggling to remember them from so long ago and it was a lot to memorise. The three pupils also stated that they did not know all of the answers to the quiz, only most, again supporting the results of the quiz.

Similarly, to results witnessed in the first lesson, the only pupil who said they had the better understanding of the lesson was the only pupil who was observed to be completely concentrated on the tasks given and completing the set work. This was opposed to the other two pupils who needed more guidance and support from the teacher to complete the work, and who seemed more distracted.

Again, all three of the pupils stated that they enjoyed group work, however by contrast to the first lesson, all three of the pupils in the second lesson believed that not all of their group was fully participating in the group activity.

The fact that the quiz in the second lesson and the answers given by the three pupils in the interview correspond, suggests that when the quiz was harder, and required knowledge from previous lessons, it gives a more accurate representation of pupils' understanding and is thus a more effective method of AFL.

Discussions of research findings

This study to determine whether a group multiple choice quiz can be used as an affective method of AFL using the lesson study method, was conducted and the results between the two lessons varied. The results of the quiz in the first lesson suggested full understanding of the lesson content, but when interviewing the pupils, they suggested otherwise. The results of the extended quiz in the second lesson suggested most of the content of the lesson and topic was understood, which corresponded more to the answers of the interviews that were given.

The fact that the questions in the quiz during the second lesson consisted of information learners had gained from the entire topic and not only the lesson, was not the only thing that purposely differed between the lessons. The questions in the second quiz were also slightly harder. However, the scale of difficulty was based on the researchers perceived understanding of the topic, what the learners actually believe to be difficult could have varied. The reality that all of the pupils stated they generally enjoy group work generally supports previous research, and the fact that the pupils didn't necessarily know all the answers but the group still got the question correct shows that they are peer teaching (Welsh Assembly Government, 2010). Peer teaching can be a successful and useful technique for a teacher to develop and is particularly prevalent in group work (Assinder, 1991). Furthermore, although the results of the quiz may not have fully represented the knowledge of all the participants of this study, it was more or less accurate for the majority especially when improved upon in the second lesson when the questions covered a wider range of information and was harder. This finding suggests that multiple choice group quizzes can be used as AFL and have the ability to show a teacher the understanding of pupils, however there are limitations.

The benefits of a lesson study have been outlined clearly in many other studies; they allow a teacher to develop professionally, and benefit both the students and the teacher (Sibbald, 2009; Warwick *et al.*, 2018; Elliot, 2019). The disadvantages however less so. It is important to critically examine any methodology used in a study, after all, no method is perfect, all have limitations, nevertheless, if these limitations are understood, they can be taken into consideration and the results still be deemed accurate.

A large part of the lesson study methodology is based around the interviews of the three participants (Dudley *et al.*, 2016). The classes that were chosen in this particular study were known to the researchers, a potential for bias (Mansell *et al.*, 2004). However, this could be perceived as either an advantage or disadvantage (Mansell *et al.*, 2004) as the participants may be more likely to be honest with someone they are familiar with and feel more comfortable around, or alternatively may be embarrassed or want to answer 'correctly' thus altering their answers and not giving a true representation of their knowledge. Moreover, the fact that the participants were peers in their class can result in false results as they may not want to be completely honest in front of their classmates, however, in the case of this study, it appeared to help the interview flow more as the participants could bounce ideas off of each other and act as a normal conversation, giving the researchers a clear idea of their understanding.

Another factor which needs to be considered is the Hawthorne Effect, a phenomenon described as a behavioural response from additional attention due to the presence of an observer (Sedgwick & Greenwood, 2015). During the lessons which were observed in this study, the observer did not interact with the participants, only stood at the side and completed the observation checklist and notes. This was done to attempt to minimise the Hawthorne Effect and not highlight that there was an observer in the room. Nevertheless, it has to be acknowledged that the sole fact of the observer being present may have altered the way the pupils behaved in the lesson, and how the teacher reacted to any behaviour issues which may have arisen. In this particular study, the participants may have put more effort into any work and been more enthusiastic in completing it. Despite this, the participants could not have falsely completed the quiz, thus the results from this are accurate and during the interview the extra attention from a second person may have helped encourage answers.

In spite of some promising results from this lesson study, the sample size is only two lessons, therefore, in order to answer the questions posed in this study completely, the research would need to be repeated in a range of classes and subjects to improve its reliability. Due to the limited time in the PTE, it was not possible to do this for this study. However, a teacher must continually develop professionally throughout their career, which means that the question of whether group multiple choice quizzes are an effective method of AFL can be continually re-evaluated, just in a less formal manner.

Going forward, this study shows that group quizzes are enjoyable for pupils, they encourage collaboration and positive relationships, as well as peer teaching. Thus even if they cannot demonstrate every pupils understanding, then they are still a useful tool in a teachers arsenal of activities, and should be incorporated into lessons. However, when used efficiently and when pitched at a challenging level for learners, this study has shown that group quizzes can be an effective method of AFL and show the understanding that pupils have of a certain topic in a short period, thus making it an effective plenary. Nevertheless, these quizzes should not be overused by teachers, and should be one small activity that is intertwined with many others making lessons engaging, accessible and enjoyable for learners.

Conclusion

In conclusion, the lesson study methodology is a successful method which allows teachers to develop their professional skills and the quality of the teaching, learning process (Dudley & Vrikki, 2019). This methodology was employed in this study to assess whether group multiple choice quizzes can be used as a plenary as a successful method of AFL. Despite some mixed results from the first lesson in this study, when the methodology was reflected and improved upon, it was shown to answer the research study question in a positive manner. Therefore, this study suggests that group quizzes can and should be used by those in the teaching profession, however, more research is required to truly perfect the quiz structure. This is also reinforced by the limitations of the methodology of the lesson study. The Hawthorne Effect (Sedgwick & Greenwood, 2015) and potential bias of the interviews (Mansell *et al.*, 2004) need to be taken into consideration and further the need for further research into this area. This can be achieved by collaboration between those working in the educational sector, and particularly those who are currently training. The findings recommend that a range of activities are employed as a method for AFL, including group work which could be in the form of a quiz such as in this investigation, however, if overused, may lose its effectiveness and enjoyability for the learners.

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