

How can we improve the levels of sophisticated vocabulary used in answers to starter and plenary questions through the use of mini whiteboards in secondary education?

Gallwch ychwanegu'ch targedau o'ch aseiniad diwethaf gan ddefnyddio'r tabl isod. /

Please add your targets from the previous assignment using the table below.

	Targed/Target	Yr hyn yr wyf wedi'i wneud yn yr aseiniad hwn. What I have done in this assignment.
Targed/Target 1	Engage with a wide range of relevant literature	I have explored further reading for this assignment, often using the references of key readings to find further literature.
Targed/Target 2	Continue accurate application of referencing.	Using the university's Harvard referencing guide to ensure that all references were structured correctly.

Over my first placement, I have been interested in pupils' engagement in various learning activities. Whilst observing other teachers' lessons and reflecting on my own, it becomes apparent that there are some pupils who do not engage in starter and plenary question sessions as much as others. These pupils tend to remain quiet unless called on, meaning there are a few pupils who tend to answer questions more consistently. Therefore, it is arguable that there is a disparity of opportunities for pupils to demonstrate their knowledge, refine their skills and fewer chances to assess their capabilities.

In order to explore this, I have conducted some research with a fellow PGCE student. This was done with my Year 7 Humanities group, and their Year 8 ICT group. These pupils were aged between 11 and 13 years old. The school is an English-medium comprehensive school, with pupils aged 11 to 16, and is under the Swansea education authority (Estyn, 2016). I discussed with my partner what we wished to research, and both found that we wanted to engage more pupils in starter and plenary questions, as well as improving the answers pupils gave during these activities. This resulted in us considering what methods could be employed to encourage further engagement and more sophisticated language in their answers. Ultimately, it led to our research question asking how the use of mini whiteboards could improve the levels of sophisticated vocabulary in starter and plenary questions. For my class, this would hopefully encourage more pupils to engage in starter and plenary questions and building on the amount of detail and the quality of their answers.

According to Wragg et al (1996), teachers who stay in the job after three years do so because they find solutions to manage the various situations they face and then internalise their knowledge in order for it to be accessible in the future. However, as Cajkler et al (2014) pointed out, the attempts made to improve education often do not focus on the teaching and learning, that would allow for any meaningful advancement in helping pupils. Taking this into consideration, it is therefore essential to focus on the literature written about research into pupil engagement and the use of mini whiteboards in classrooms, to explore what has already been written on these topics and how this could help my own research into them.

An accepted definition amongst the literature of what an engaged pupil is, is someone who positively reacts to various tasks in a lesson and always strives to challenge and extend their learning (Skinner and Belmont, 1993). The engagement of pupils, and their subsequent motivation in class, is considered a key factor in their success in school and at how much they thrive (Marsh, 2012). Similarly, Cochrane (2015) suggests that the most effective lessons are when pupils are fully engaged in the various learning activities and are highly motivated to learn. Skinner and Belmont (1993) claim that the pupils who are the most engaged in lessons are easier to identify, as they are enthusiastic and involved in their own

learning, whereas pupils who are unengaged appear to be passive, bored, withdrawn and more prone to give up.

In order to increase engagement, pupils should feel satisfied and proud with their accomplishments, and have result in an increase their abilities and skills (Skinner and Belmont, 1993). This sentiment is repeated by Donaldson (2015), who also argues that this should be done through the development of new approaches, followed by evaluating their benefits, and then a promotion of effective techniques. As the focus of this research paper, it has been suggested by some that mini whiteboards would be effective in engaging more pupils in lessons and encourage more sophisticated vocabulary. Wiliam (2018) suggests that the mini whiteboard is simply a modern reincarnation of the pieces of slates used in the nineteenth century. Hirschmann (2015) also makes this connection, describing the time that she used a slate in a maths lesson during a year she spent at a school in France. The purpose of a mini whiteboard, like a piece of slate, is that it allows for a space for workings out that were not permanently recorded, therefore making any mistakes unproblematic as it could be easily erased (Hirschmann 2015). Similarly, when Mountford and Price (2004) were discussing ideas on how to improve aid all pupils of varying ability who chose to take History at GCSE, mini whiteboards were considered to scaffold their writing for answering exam questions. Furthermore, Hirschmann (2015) argues that this would be a safer space for pupils to practice, and that pupils often enjoyed being able to rub out their errors in a way which left no trace behind, a task more difficult to achieve if they were writing in their exercise books.

Beyond its ability to provide pupils with a space for gathering their thoughts, and making rough notes, mini whiteboards have also been noted for their use as a tool which enables an assessment of pupils' progress. Hirschmann (2015, p. 34) suggests it allows a teacher to "see inside each student's mind", as demonstrated by one of the teachers included in study completed by Cajkler et al (2014), who used mini whiteboards to check all pupils had got the units right in their maths equations. This form of feedback provided a solution of engaging and acquiring information on each pupil in the lesson within seconds (Andersson and Palm, 2018). This has been termed an "all-response system", which Wiliam (2018) similarly argues that it allows for teachers to quickly check assess pupils' understanding on a topic before moving on in the lesson (Andersson and Palm, 2017, p. 114).

The literature on mini whiteboards have also considered their adaptability when it comes to the tasks sets around them. After gaining this knowledge, Andersson and Palm (2017) argues that after assessing pupils' answers from the mini whiteboard, they could adapt any activities and any instructions accompanying them to meet pupils' learning needs. Likewise,

Wiliam (2018) suggests that pupils from the beginning of primary school to those completing their A Levels could complete a set task on a mini whiteboard. Arguably, this would also suggest that a question could be posed to pupils of a class with mixed ability pupils and would allow for pupils to respond to the question as best suited them individually. Additionally, these tasks could be tailored to encourage pupils to work in pairs, which Hirschmann (2015, p. 35) argues would “certainly increase the level of student engagement”.

In order to explore pupil engagement in tasks with mini whiteboards, lesson study was chosen as the research methodology. Lesson studies originated in Japan in the 1870s, but began to be used more widely in 1950s, focusing on developing a teacher’s practice knowledge (Cajkler et al, 2015; Dudley, 2014). From this, teachers devise any improvements that could be made or solutions to any problems they observe (Fernandez and Yoshida, 2004). There are five main parts to a lesson study: a review of challenges pupils are facing; identifying three case pupils to observe during a research lesson; joint planning a research lesson; teaching and observing the lesson; and finally, an evaluation meeting (Cajkler et al, 2015). This is done in collaboration with other teachers, enabling teachers to both observe and teach a lesson including an aspect of their chosen research topic (Coenders and Verhoef, 2018). As suggested by Dudley (2014), the focus of these ‘research lessons’ usually centre around innovating or refining a pedagogical approach employed by teachers, that would lead to an improvement in pupils’ learning and could be shared with others in the teaching profession. According to Cordingley et al (2004), this combines the various features of professional learning, including it being a collaborative enquiry which occurs in real classrooms and focuses on real pupils, and would therefore have a greater impact on improving learning and teaching.

This methodology was chosen because it provided numerous benefits for teachers. For example, it enables greater collaboration between teachers. Dudley (2014) argues that there is a tendency amongst teachers to practice in isolation, therefore restricting the opportunities professionals must learn from one another and associates observations with judgements on individual teachers. Hill (2013, p. 6) also suggests that schools should be encouraged for their professional development through taking responsibility to improve their own practices and thus “foster a culture of open classrooms” which can allow teachers to observe and learn from one another. Similarly, van Groningen and Bennett (2012) argue how isolation disadvantages teachers, suggesting that it distances them from the goals of their departments, and thus lesson study provides an opportunity for interdepartmental communication. This focus on collaboration in a lesson study is argued by Cajkler et al (2015) to be one of the benefits of lesson study, and opens an opportunity for another benefit, namely that it develops teachers’ knowledge and pedagogical practices.

Professional development programmes have been highly praised, and their importance emphasised by the Welsh Government and Donaldson in recent years (Hill, 2013; Donaldson, 2015). Hill (2013) stresses how teachers' development should involve improving classroom practices, rather than going on training courses, specifically naming lesson study as an example of what should become the norm.

Through completing a lesson study, various methods of data collection are used. Firstly, there is observation. Both myself and my partner taught a research lesson, and then observed the other's. Observation is a common method used to collect data about people or cultures, and allows for the description of various events and behaviours in different social settings, thus making it an easy method of data collection for teachers to employ (Kawulich 2012; Marshall and Rossman, 1989). The observation used for this research was non-participation, or direct observation, meaning that all observations during the lesson were made without interacting with the case pupils (Kawulich 2012). This observation was also 'overt', meaning that participants were aware that they were being observed, as is the preferred method of observation (Kawulich 2012). These observations needed to be recorded, and as van Groningen and Bennett (2012, p. 21) suggest, this must be done with a "well-designed assessment tool". Therefore, to capture these notes, an observation sheet was designed in order to record the qualitative data that could be gathered in the lesson (see Appendix 1, 2, 3).

Following these observed lessons, data is also collected through the interviews of case pupils, which enables gaining their perspectives on the lesson, especially concerning what they felt they had learnt and what could be changed to further improve their learning experience (Dudley, 2014) (for list of interview question, see Appendix 4). The three participants for each research lesson were chosen because of their varying ability and use of sophisticated language in starter and plenary questions. This also typically follows a similar pattern when it comes to engagement in the task, for example that the pupil of a higher ability is the most likely to actively engage in answering the questions set as in the starters and plenaries. Finally, myself and my research pattern reflected on the lessons, and captured these reflections in a sheet we had designed (see Appendix 5, 6, 7). This was based off Gibbs' (1988) reflective cycle, allowing us to describe events and come to conclusions.

When conducting research in a classroom, any educational researcher takes on a position of care for all participants involved in the process (Head, 2018). This means adhering to the BERA (2018) guidelines and operating with respect to all participants. For myself, this means completing an ethics form for approval for Yr Athrofa Ethics Committee. For this

research project, a prominent ethical consideration was how to gain consent from the participants. BERA (2018) outlines that gaining consent applies to children and young people, however as Blackburn (2015) points out, this can be a challenge because they are under the age of 18. Therefore, consent must be gained from their parents or carers (see Appendix 10). This was done through sending home a letter informing them of what the research was about with an attached consent form. Furthermore, assent from the participants must be gained and throughout the process, should be checked with the participants, ensuring that it is not simply being done to tick a box (BERA, 2018; Blackburn, 2015; Poulton, 2020). This was done before the lesson and before the interviews. The consent and assent given must be with the knowledge of what is happening during the research and what the study involves (BERA, 2018).

Another essential ethical consideration to be made is regarding the protection of all data collected. This has become a more prominent consideration due to the advancement in technology and the consequences it has for researchers (Head, 2018). According to the UWTSD Research Data Management statement (2018), any data recorded during research must be retained safely, safely and in compliance with any legal obligations. This is reiterated by BERA (2018), who argue that all data on the participants must be protected so it does not lead to a direct or indirect breach of confidentiality and anonymity. To be align with this, all online data was stored on a secure OneDrive file.

I taught the first research lesson, a Humanities lesson with a Year 7 class, and my research partner observed (for lesson plan, see Appendix 9). This lesson saw pupils using mini whiteboards in the starter activity, as recommended as a potential use by Hirschmann (2015). Pupils were asked to recap what they had learnt in the previous lesson and describe what the journey was like for slaves who were taken from Africa to the Americas. Three questions based around this were displayed on the PowerPoint to help guide pupils. This asked them what they remembered about the journey; what were the different points on the Slave Trade route; and what different items were used to trade along the route. Before the lesson began, the mini whiteboards were placed by each pupils' seat, and then pens and rubbers were distributed as evenly as possible. This was done following the recommendation made in the literature on mini whiteboards, to have equipment ready for pupils to use (Hirschman 2015). For their plenary activity, pupils were asked to write out three sentences, two key words, and draw a picture in their books, summarising what they had learnt about life on slave plantations.

Through the starter activity, pupils activated their prior knowledge and demonstrated what they remembered from the previous lesson. From the answers case pupils gave for the

starter activity, and looking at some others in the lesson, there does appear to be an apparent trend in line with pupils' ability to how much they wrote. Pupil 1 was able to write what they remembered about the places along the route but did not describe the journey itself. Pupil 2 was able to describe the journey as "stressful, depressing, traumatizing", and could recall the answers to the other questions around the topic. Pupil 3, although they did not write anything about what items were traded along the route, did use more sophisticated vocabulary in their description, for example suggesting it would be "exhausting... tedious, restless" and noting the trade itself was "racist". When completing the plenary task, all three pupils did reach the drawing, and this is seen in other answers from the rest of the class. Pupil 1 arguably did expand their vocabulary by the plenary task, including "abuse" and "starvation" as their key words. However, Pupil 2 used similar vocabulary from the start activity, for example including the word "traumatizing" in their answer once again. Pupil 3 arguably used less sophisticated vocabulary, not writing two key words, and writing three simple sentences in this activity.

Based off these results, it is arguable that the mini whiteboards did help the pupils use more sophisticated vocabulary, especially for those of a higher ability. When interviewed after the research lesson, all three case pupils stated that they preferred completing the starter activity with the mini whiteboards. Furthermore, they all also stated that they would want to participate more in activities if they were using the mini whiteboards to answer questions. When asked to explain why this was the case, Pupil 3 stated that they felt putting their hands up to answer was too tiring as they had to wait to give an answer. These three pupils all also believed that the whiteboards gave them more confidence to answer questions, because it gave them more time to think of an answer and they had something to read as their answer. The answers the case pupils gave in the interview seem to align with the observations that pupils were more engaged in the starter activity with the whiteboards, than they would have been without them. Furthermore, it also suggests their own awareness that they were using more sophisticated vocabulary with them than they would have done without them.

Reflecting on this lesson, my research partner and I considered what changes would be made before the second research lesson. We concluded quickly that there needed to be more pens available for pupils to use. This was also suggested to us by the case pupils themselves. Pupil 1 and Pupil 3 thought the activity would have been improved if there were more pens, with Pupil 3 also suggesting that the rubbers could also have been better. As the next research lesson was taking place in a few days' time, we were unable to acquire different rubbers and so had to retain using the same ones. However, we did find more pens so that there was enough for one each. However, when Pupil 2 was asked how the activity could be improved, they suggested that adding an element of teamwork or competition could

be more engaging. As we wanted to keep the two research lessons similar, only swapping when the whiteboards were used, this was something we decided to reflect on after the lesson study was complete.

From this first experience of a research lesson, we found that our observation sheet and interview questions worked well, allowing us to record the data we required and gain insight to the participants' experience. We did however believe it would be useful for the next lesson to bring an iPad to take photos of the pupils' work. As we did not have one in the first research lesson, we asked pupils to write their names on the whiteboards with their answers and recorded their answers following the lesson. Having an iPad to take photos during the lesson seemed to be a time-saving advantage we could implement during the second research lesson.

For the second research lesson, ICT with a Year 8 class, I was the observer and my research partner taught the lesson (for lesson plan, see Appendix 10). For the starter activity, pupils were asked to write out three sentences describing what Excel could be used for along with two key terms relating to Excel in a Microsoft Word document. In this lesson, the mini whiteboards were implemented in the plenary activity, asking pupils to recap what they had used Excel for in the lesson, essentially flipping the order of the activities within the two lessons.

All three case pupils completed the three sentences but varied on how many key words they wrote down. The pupil of a higher ability in this class, Pupil 4, arguably wrote more complex and detailed sentences, such as "using formulas, you can find averages and do basic mathematical calculations" and wrote down two key words. Pupil 5, a middle ability pupil, wrote arguably less complex sentences, but were more structured and detailed compared to a lower ability pupil, Pupil 6, though they wrote about similar functions in Excel. For example, one of Pupil 5's sentences was "to sort out information into organised tables", however Pupil 6 wrote three sentences in the same format as "use excel to make graphs". Furthermore, Pupil 5 wrote one key word, and Pupil 6 wrote none. Looking at other pupils' work, they also wrote similar sentences and key words. When the plenary activity began, mini whiteboards were distributed to all pupils, and fortunately there were more working pens this time, though some swapping did occur for this to happen. All the whiteboards were handed it at the end of the lesson, and in all but one case, every pupil wrote something on the whiteboard. It was Pupil 6 that did not bring their board with anything on. When asked why this was the case, they said that they did write an answer, but rubbed it out before it could be seen and did not re-write it, despite being asked to do so. For Pupil 4 and 5, both used more sophisticated language in their answers to describe what they had used Excel for in the lesson. Pupil 4

wrote a very detailed answer describing the different functions they used, for example stating that they had “used many formulas for subtraction, multiplication, ranges and IF formulas”. This was replicated across the rest of the class.

Therefore, it appears that for the most part, these case pupils also used more sophisticated language when writing on the whiteboards than they did without. The answers provided on the whiteboards and their quality is again supported by the interviews of the case pupils. Whereas both Pupil 4 and 5 noted that their favourite part of the lesson was when the whiteboards were used, Pupil 5 in particular even noting that they felt it enhanced their vocabulary, Pupil 6 was unsure and rated the plenary task with the whiteboards fairly low. Pupil 6 preferred to use the computer, stating that they felt it gave them help with spelling and meant they had access to the internet so they could check definitions. Pupils 4 and 5 on the other hand both preferred the tasks when using the whiteboards and felt it gave them more time to think of better vocabulary. In a contrast to Pupil 6’s answer, Pupil 4 thought there was an added benefit to using whiteboards in their ICT lesson because it allowed them to exercise their mind, and not become over-reliant on the computer. Pupil 5 noted that whilst they may use the same vocabulary in other task, when writing on the whiteboards it gave them time to consider other ways of phrasing their answers.

When the pupils were asked on how they would improve starter and plenary activities, the idea of competition was reiterated. Both sets of case pupils mentioned how engaging they found competitions in lesson. Pupil 6 argued that it could help with ‘strategy’, and that they could answer multiple choice questions on the whiteboard and gain points, in a similar way to the games that they play at home. Pupil 5 expanded on this and suggested that a championship like event could take place across a term or full school year. Pupil 4 agreed with this and said that they would also find this engaging. Arguably related to this, Pupil 5 also suggested that they would find it beneficial if after using the whiteboards, the class could regroup and attempt to ‘sort’ what they had all written down. This suggests that these pupils feel they would benefit from more collaborative work.

The inclusion of using the iPad in this lesson did prove beneficial, as it saved time after the lesson when we went through the different answers. The observation sheet also worked for this research lesson, allowing us to note the data we wanted to search for in the lesson. Similarly, the interview questions proved to be useful for these case pupils as well, allowing us to gain their perspective on the lesson, and allowed them to discuss at length what they thought about the lesson.

Looking at these results, it does seem that for the most part pupils did benefit from using the whiteboards, for similar reasons to those noted in the literature. Andersson and Palm (2018)

note that most pupils in their study did enjoy using the whiteboards, and this encouraged teachers to use them more often. Out of the six case pupils, five noted that they enjoyed using the whiteboards and preferred having them in starter or plenary activities than if they did it without them, which may prompt us to use them more often in class. The reasons the pupils stated for enjoying the whiteboards were also like those mentioned in the literature. For example, the pupils in the first research lesson liked that they had something to read out from when called on to answer the questions. This is arguably like Mountford and Price (2004) who discussed using mini whiteboards to help pupils scaffold their writing.

Furthermore, Dudley (2014) suggests that carrying out a lesson study often alerts to teachers to pupils who are working at a different ability than previously thought. This can be identified with Pupil 2 and 5, who although considered middle ability, contributed and engaged more when using the whiteboards. It allowed them to express their ideas further, revise the vocabulary they used and gave them more confidence to answer a question. Similarly, Pupil 1, of a lower ability, was able to demonstrate the knowledge that they did have surrounding the topic, and felt they had more confidence to do so when they had a whiteboard to answer from.

For my class, I believe this will mean considering further opportunities for the use of mini whiteboards in lessons. It may mean exploring how the whiteboards could be used to enable more collaboration between pupils and how this could be turned into a competition. This is supported by Hirschmann (2015), who suggests that whiteboards can be used for games. Two of the case pupils in the lesson I taught admitted that they looked at other people's answers on the whiteboards and talked to one another about the answers. This is quite interesting and would be something I would like to explore in the future.

Our research method proved to work well. As suggested by Mountford and Price (2004), the opportunity to work collaboratively with another teacher enabled us to encourage one another and allowed us to develop and question ideas together. This ensured that we did not become isolated in our practices and meant that when we observed one another, we knew that it was not being done as a judgement of our individual teaching (van Groningen and Bennett 2012). Furthermore, the research developed our teaching practice, but did so in a way that it focused on what would benefit our pupils (Cajkler et al, 2015). It also allowed us to develop our professional learning in real classrooms with our own pupils, instead of going on training days, as suggested should be the norm in the literature (Hill, 2013).

One limitation of our method I would note was that to gain the case pupils' immediate feedback as soon as possible, it meant conducting the inducting during other lesson, and thus taking them from another subject. This was unavoidable, but their teachers were

informed and were understanding that it was required for our lesson study. Furthermore, although the whiteboards were handed out as efficiently as possible, it did take some time to ensure all pupils had the right equipment and then for them to be gathered back in. This has the potential to slow down the pace of the lesson and reduce what is covered in the lesson. Hirschmann (2015, p. 35) also points this out, and suggests that if they are not always present in the classroom, then they maintain a status as being “something special” in a lesson, or more practically remove the opportunity to use them for “unsanctioned activities”.

Ultimately, I believe the findings from our research can be generalised. Most of the case pupils in this lesson study preferred using the whiteboards and felt that it gave them the opportunity to use more sophisticated vocabulary. The pupils chosen represented a range of abilities and level of engagement in lessons, and all but one produced work that demonstrated their knowledge further than would have been possible without the whiteboards. The methods we used ensured that the findings were reliable and valid to the best of our abilities. We also ensured that our data was gathered in a way that maintained the ethics of the research and complied with BERA (2018) guidelines.

This lesson study has had a positive impact on my own professional development. As well as motivating me to explore the uses of whiteboards in my lessons, it has also provided with the reasons as to why I should do this. This quality is seen as an integral part of teaching according to Donaldson (2015), making teachers reflective practitioners. Furthermore, it has provided me with the skills and honed my capabilities to access information relevant to a research topic and critically evaluate it, which Broekkamp and van Hout-Wolters (2007) note is a problem that may hinder teachers when carrying out their own research. The preparation and reflection on the lesson study, done in collaboration with my research partner, has also been worthwhile for my professional development (Coenders and Verhoef, 2018).

Moving forward, I would like to explore the different uses of whiteboards in lessons like the lesson I taught for the lesson study. For example, Hirschmann (2015) suggests using them to brainstorm ideas, with a concentration on sophisticated vocabulary, or as a means of prediction, which could be looked back at in a following lesson. Similarly, Wiliam (2018) suggests that they would be a useful tool to bridge two lessons. He presents the case of a teacher who set six questions for pupils to answer on a whiteboard, four of which they had covered in the lesson, but the last two were on the next lesson’s content (Wiliam 2018). This could be used as a plenary task in a lesson, to see if pupils already had some conceptions of the next topic and also alert me to anything that I would have to address and correct in the following lesson. This would also provide an opportunity to use the whiteboards as a

feedback tool, so that future learning activities could be adapted for pupils' learning needs (Andersson and Palm, 2017).

Considering my research, I have reflected on what recommendations I would make. Firstly, it has contributed to my professional development. It had provided me with an opportunity to learn how to consider various ethical dilemmas, and thus arguably made me a more virtuous and conscientious teacher-researcher (Poulton, 2020). Similarly, my observation skills have been refined. Kawulich (2012) argues that for a teacher-researcher, much can be learnt or improved when carrying out a lesson study, including the ability to collect data, write quickly, memory skills and use the observations in future teaching practices. These skills have also contributed to my development along the Qualified Teaching Standards as set out by the Welsh Government (2019). Specifically, it aligns with the 'Wider reading and research findings' and 'Professional networks and communities' aspects in Professional Learning, by allowing me to engage with action research, informed by wider readings, and understanding the contribution of research (Welsh Government, 2019, pp. 48-49).

My reflections have also prompted me to consider what I would do if I was carry out lesson study research again. For example, van Groningen and Bennett (2012) suggest that a lesson study may be limited depending on what time in the school term and at what point during a topic it is carried out. This could arguably apply to my research lesson, as had only just begun the topic and were reflecting on one lesson's worth of knowledge. Another thing I would consider in the future if I were to carry out another lesson study would be when consent forms and information letters were sent out. In future, I would aim to get these out to pupils and parents earlier than done in this research project, so to widen the pool of potential case pupils.

At the end of lesson study, comes the opportunity to share good practice with others. BERA (2018) outline that it is the responsibility of a researcher to consider how to inform participants of the results of the research they were part of. For this research project, this essay is the write up of our results. In our information letter to parents we offered them to opportunity to contact us with any questions on our research or for a copy of the write-up once it was complete. This could also be shared with any colleagues who wish to generate any new knowledge from our research and thus potentially profit in their own teaching practices (Broekkamp and van Hout-Wolters, 2007).

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