

Overview

Monday, December 9, 2019 9:20 AM

Student Name: Cerys Felton

Student Number: 1900196

Assignment Title: A portfolio which illustrates a critical reflection of progress made on the planning and implementation of three pedagogical principles

Pathway: Secondary PGCE

Link to OneNote: https://uowtsd-my.sharepoint.com/:o:/g/personal/1900196_student_uwtsd_ac_uk/EppAapVINSFMhX_zPiXhj1AB5DLs6WFhTFymliTdwOZaqA?e=MSduRa

Assessment For Learning

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This Set 2 Year 9 class were for this term learning Key Stage 4 Chemistry, Unit 2 of the WJEC Syllabus for Double Award Science.



Atomic
Structure...

Slides 83-96 of this lesson series are those of the recap lesson. This lesson was the last one I taught Year 9 set 2 (9A) before returning to university. I therefore made the decision to ensure that the information I had taught had been retained making assessment of learning the integral part of the lesson. I chose to stick close to the WJEC syllabus questions because I believe the more practice they get of these questions the more comfortable they will feel with their layout/format etc in preparation for their GCSE.



9A AFL
Evidence



Lesson Plan
9A Recap...

Here is the lesson plan that includes my reflections from the lesson

Attached here, is the evidence that AFL was carried out throughout the lesson. This is the questions and answers pupils were given. Each section was reflected upon as a class so pupils could self-assess themselves.



Atomic
Structure...

Cross Curricular

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A)



Metal Vs
Non Metal...

B



Lesson Plan
7E L15

C



Sustainable
Resources...

D



Research
Notes for 7..

E



Environme...
Friendly...

F



Evidence of
effective...

Included here is the Powerpoint (A) that instructed pupils to carry out their own research to produce presentation notes using laptops on the given topics shown in the attachment "sustainable resources presentation topics" (C). I have also included the lesson plan (B) demonstrating the planning to implement a DCF lesson. Attachment (D) included here is evidence that research was collected during the lesson – hand written by a pupil. Attachment (E) was the evidence that pupils were required to think about how they could be more environmentally friendly that was used as a tool to break up the presentations ensuring pupils could sustain their interest in every groups presentation. This also served as a cross-curricular task in which pupils were required to think about the world around them. Lastly, attachment (F) demonstrates that the learning was effective as the class gave feedback on the research that was presented by others in the following lesson.

Blend of Approaches

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|----|---|----|---|----|---|----|---|----|---|----|---|
| A) |  | B) |  | C) |  | D) |  | E) |  | F) |  |
| | Lesson Plan
Sheet 8E L1 | | Question for
Circus of... | | Circus of
Forces... | | 14-11-19 | | feedback for
Circus of... | | 2-12-19 Task
Sheet |

Included here is the lesson plan (A) that shows I intended to carry out the circus of forces activity and my reflections on it. The second attachment (B) are the questions that were at each station. The third attachment (C) is a Powerpoint slide that was displayed when the activity was taking place. The fourth attachment (D) is evidence from a pupils work that they carried out the following lesson showing that they had learnt from the circus of forces practical. The fifth attachment (E) shows the teachers feedback from the activity. The last attachment included (F) is evidence of me getting the pupils of a different class to use a table when they did a similar activity to the circus of forces. This last piece of evidence demonstrates that I learnt from the circus of forces task and knew what was necessary for the next constructivist approach lesson to sustain engagement throughout the task.

Critical Reflection

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Introduction

It is paramount for trainee teachers to reflect on their experience thus ensuring progression for themselves and their pupils towards the goals set out by the new 2022 curriculum. This critical reflection of my progress in teaching secondary school science demonstrates the application of three pedagogical principles: assessment for learning (AFL), cross-curricular activities and the application of various teaching approaches, all deemed as vital to the development of learners of the new curriculum report proposed by Professor Donaldson.

Firstly, according to the report AFL, is deemed vital due to its ability to provide teachers with an insight into the effectiveness of the learning. Secondly, cross-curricular activities are deemed vital because the new curriculum seeks to break the barriers between subjects being separate entities thus ensuring pupils are equipped with some of the most important life skills including literacy, numeracy and digital competency. Lastly, a blend of approaches is deemed vital in the teaching of secondary school science, even more so for abstract concepts. The National Welsh Curriculum for Science (2008) recommends activities that spark curiosity, are enjoyable and challenging. A blend of teaching approaches are therefore essential to ensure that even the more difficult concepts can be learnt. In conjunction with this 2022's curriculum reinstates the need for learning that encourages critical thinking and problem solving, skills that can be applied in all walks of life and learnt through applying a blend of teaching approaches.

Developing high quality, appropriate AFL techniques, cross-curricular activities and applying a blend of approaches in teaching will help to holistically support me to become a teacher that meets the standards laid out in the Successful Futures (2015) report for the new curriculum to support the needs of learners today and the future.

Assessment for Learning

AFL is defined by Wiliam and Black (1998) as activities undertaken by teachers and by their students in assessing themselves, which provides information to be used as feedback to modify the teaching and learning activities. This becomes “formative” when the evidence is used to adapt the teaching to meet the learners needs. Wiliam and Black (1998) also highlight AFL is not something that should be added to teaching but is integral to it.

Importance of AFL is reflected in a study run by the Assembly Government (2005-2008). They concluded AFL is effective in teaching and learning because it not only increases the enjoyment of the learning process for both teacher and learner but most importantly it improves learners performance (leads to higher quality outcomes). They also found it improved learners engagement on the subject, and the learners ability to transfer generic skills leading to more employable individuals.

However, in order to present a non-bias account of AFL it must be highlighted that authors such as Torrance (2012) in conjunction with Marshall and Drummond (2006) conclude that it is just a tool for judging student performance. Torrance (2012) goes on to state the limitations of AFL’s scope and utilisation in relation to the multitude of methods associated

with formative assessment. Hargreaves (2013) in agreeance with Torrance and other researchers (Bennett, 2011; Klenowski, 2009; Swaffield, 2011) criticise formative assessment for its narrow use in just classroom tests and coaching to improve test results.

In opposition Markwick *et al.* (2003) within a secondary school science setting found a 50% increase in students acting upon teacher comments over a two-year period via an AFL technique that used open ended questions and comments to guide deeper thinking.

According to the new 2022 curriculum informed by Donaldson (2015) there will be a renewed emphasis on AFL as an essential and integral feature of learning and teaching.

Aiming to make assessment of progress more developmental, Successful Futures proposes multiple criteria that will need to be met from 2022 regarding assessment. Engaging students in their own assessment, being clear about the assessment reasons in tandem with advanced planning for its uses are example criteria within Successful Futures that also provides recommendations for meeting these expectations.

With AFL held in such high regard I have therefore placed its implementation as a core element of my lessons, in particular with 9A; a higher ability class with many on track to achieve A's at GCSE. The Powerpoint included for this pedagogy shows evidence of AFL throughout most of 9A's lessons, in particular the concluding lesson. This recap lesson consisted of separate open book task papers (see evidence) in which pupils had to answer WJEC questions. I stopped pupils once they had reached the end of each section to go through the answers as a class. AFL was carried out by picking a wide range of individuals to answer questions, asking pupils if everyone got that answer and if they didn't to raise their

hands and if nobody raised them asking the class as a whole does everyone understand. If it was evident that some did not understand I would go through the answer again in more detail and ensure everyone understood before moving on. I know that the lesson was necessary as some had forgotten subjects that were covered in the first lessons I taught. I also know that the learning was effective as shown by the evidence of the results of a pupils work. The examples included here demonstrate my increase in the use of AFL throughout the lesson series, thus illustrating the progress I have made to meet this pedagogical principle. My lessons with 9A show a variety of AFL techniques from quantitative as evidenced here (see attached) through the use of open book task papers and development of literacy questions to qualitative that was observed and documented through teacher feedback that highlighted my use of more open-ended questions to various pupils.

An aspect of development I could undertake in this area going forward is to guide pupils to think deeper as shown to be effective in Markwick *et al's* (2003) study. This may have been more difficult with 9A over the autumn term due to not feeling entirely confident in the subject area. In the Spring term I teach 9A Biology, my specialist area. Not only will I feel more confident to ask more deep, critical thinking questions but I will also go out of my way to research these questions in advance being more familiar with the scientific terminology. This aim agrees well with the development of ambitious and capable learners, in which Donaldsons Successful Futures proposes as one of the four main purposes for young learners to be. In particular, they will be better able to build a body of knowledge and develop the skills to connect and apply that knowledge in different contexts, they will be

more likely to deeply question the subject and enjoy solving its problems and challenges.

Cross-Curricular

Cross-curricular learning recognises multiple viewpoints and seeks to build more knowledgeable, lasting and transferrable understanding of the surrounding world. (Barnes, 2015). Today many teachers see cross-curricular approaches as motivating, enjoyable and enables the building of relevance and meaning into a curriculum sometimes seen as narrowed (Wrigley *et al.* 2012). In a study by Price (2010) 48 Key Stage (KS) 3 Year 7 students of various attainment levels undertook cross-curricular activities in a carousel fashion to study sorting and classifying skills in maths, history, religious studies, art and geography. The study found an improvement of pupil learning quality through various areas such as reflections both of their work, work with others and idea collaboration. Some students' thinking skills became more obvious to them with some further able to apply this across contexts in partnership with developing confidence to make criticisms and suggestions.

Jones (2009) however highlights the disadvantages of cross-curriculum approaches with its integration confusions and time-consuming preparation. Teachers are already stretched to develop lesson plans, mark, and prepare to teach, thus a sizeable change in the way teachers structure their planning time is required. It may also be difficult to assess that all disciplines have been represented (Lynch, 2019). Greenwood (2013) expands on this in a study involving interviews and questionnaires to teachers at 878 Northern Ireland Primary

Schools. The study indicated that science skills at primary level had suffered a serious demotion when compared to other core subjects literacy and numeracy. There was an underlying fear from teachers that cross-curricular planning could over-emphasise content as opposed to skills.

Nonetheless, Successful Futures reports on the cross-curriculum responsibilities of literacy, numeracy and digital competency as essential for individuals to successfully and confidently contribute to society. Findings in the ICT Steering Group's report to the Welsh Government specify the fundamental importance of digital competency skills to life and its equal importance to literacy and numeracy (Successful Futures, 2015). The lesson evidenced within this report for Cross-Curricular activities not only meets the recommendations required within the new 2022 curriculum for incorporating ICT but also addresses other aspects of the report. In regards to the four purposes via the research that pupils were required to conduct in the lesson contributing to developing more ethically informed citizens of Wales and the world. Pupils used evidence to form views, engaged with contemporary issues, improved their understanding and considered the impacts of their actions when making choices. This ICT lesson allowed them to become more aware of the world and to not only show their commitment to its sustainability but give them the tools and information they need to make informed decisions to sustainably prolong its resources. The example documents included demonstrate the information that a student found on a laptop lesson on the sustainable use of cotton. They were required to present this information to the rest of the class the following lesson. Attached also is a diagram that pupils filled out regarding lifestyle choices they could

make to be more environmentally friendly based on some of the research they found.

As PTE1 progressed I found myself adopting many cross-curricular lessons to KS 3 & 4. In particular complying to the LNF. Applying the DCF was the last step to develop my experience in applying the essential cross-curricular responsibilities set by Donaldson.

Reflecting on all three of the cross-curricular responsibilities I delivered I believe that I implemented them very effectively. In particular the digital competency lesson was rewarding; seeing pupils interested in the subjects and fully engaged. It was clear the learning was effective as the class gave feedback on the research that was presented in the following lesson (see attached evidence). This highlights the literature documented here from Barnes (2015) and Wrigley *et al.* (2012). However, I do agree with Jones (2009) in relation to the high level of time consumed in this lessons preparation. The lesson required a higher degree of organisation to ensure that content pupils found online was suitable, appropriate questions were developed and hyperlinks provided for guidance as well as ensuring pupils were organised into appropriate groups only possible when having a good understanding of the class. Added to this was the concern that all pupils had working equipment and they had enough time within the lesson to collect research.

To ensure I continue to develop in the implementation of cross-curricular activities following closely with the new 2022 curriculum I will look to further promote the connections of one subject across different aspects of learning. This may for example be through the increased use of ICT to produce graphs or calculations through excel for KS4 pupils, or tasks that require finding research online where no hyperlinks and only one question may be given. I

will always however, consider the attainment level of the class and provide tasks that I feel are appropriate. It has been highlighted that students receive a lower level of science homework in my partner school thus I may start to incorporate more literacy tasks as homework to ensure that I still look to teach the science skills that Greenwood (2013) has shown to be affected due to cross-curricular activities. This therefore ensures I meet both aspects of this core subject – the cross-curricular and scientific skills elements.

Blend of Approaches – Utilising a Constructivist Approach to Teaching and Learning

When self-reflecting on what we have learnt, it is often the moments when immersed in a particular environment and experience that enables retention. This is summed up in a learning theory known as constructivism: i.e. experiences are vital to the development of knowledge and meaning (Olusegun, 2015). Therefore, it is likely direct teaching has its limits to long-term knowledge retention with students requiring to actively formulate knowledge themselves. Constructivism channels curiosity about how things function and it is said that teachers using this approach encourage pupils to constantly assess how the activity is helping them gain understanding, thus could serve as a good AFL technique (Olusegun, 2015). By innate inquiry constructivist learners ideally become proficient learners (Shermila, 2013). According to Srivastava and Dangwal (2017) students enjoy and learn more when they are actively involved in the process of learning. Sarita (2017) also states education is more effective when focusing on thinking and understanding as opposed to solely memorising. Peterson (2001) was able to demonstrate in his work the positive effect of constructivism in a KS3 history classroom, utilising roleplay. Peterson (2011) stated that

bringing the subject to life energized the class and served as an AFL. The pupils were said to have developed deeper subject understanding as opposed to textbook surface learning.

Adams and Engelmann (1996) supported by Butler (2019) however, raise serious concerns with the constructivist approach, reporting it as an ineffective method in promoting academic achievement due to its absence to support critical thinking skills and self-esteem. Some educators are also of the opinion that teachers, not learners, should control learning, believing that constructivists often do not focus sufficiently on basic academic tasks, and too much importance is placed on skills (Santrock 2001).

In the Welsh National curriculum for KS3 Science it is suggested that activities should encourage curiosity, creativity, be interesting, enjoyable, relevant and challenging for the learner. The subject should allow learners to initiate, explore and share ideas and develop knowledge in more abstract areas (Welsh Assembly Government, 2008). This therefore calls for a more blended approach for teaching science. Donaldson (2015) also reports that the high expectations embedded in the new 2022 curriculum will only be grasped through effective teaching that engages pupil's curiosity and enthusiasm through a blend of teaching and learning approaches including those that promote problem solving, creative and critical thinking.

In the teaching of forces at KS3 I inevitably found myself needing to use a blend of approaches to make the area more interesting and comply to the conditions of the national curriculum. In my previous assignment I also discussed the use of a constructivist approach

to teaching and learning and became more interested in it. I therefore looked for opportunities to utilise it in PTE1. The lesson evidenced in this assignment reflects that I practiced using constructivism to apply the pedagogical principle 'employing a broad repertoire of teaching approaches. The lesson task entitled the 'circus of forces' required pupils to visit 6 different stations each with a type of force being displayed that pupils could manipulate in tandem with a set of questions related to it. The activity went well with teacher feedback (see attached document) stating that the practical got them excited and they worked well as a result. The following lesson an AFL starter task was carried out to ensure pupils could list the different forces and anything they could remember about them (see evidence). It was clear from the verbal feedback received from the pupils followed by the easy completion of the following task of the lesson (see evidence) that the 'circus of forces' activity had been a success. The good results from this task therefore supports the literature presented here by Peterson (2001), Srivastava and Dangwal (2017), Sarita (2017) etc. of the benefits of adopting a constructivist technique in lessons. Pupils enjoyed and learnt more when they were actively involved in the process of learning. Bringing the subject to life towards the end of the lesson did energize the class and serve as an AFL, thus reinforcing the knowledge. This was then reflected in the starter of the next lesson.

The organisation of pupils into appropriate groups made this lesson more challenging. I felt that if I'd have had more contact time with the class I could have better organised groups that would have worked well together. I learnt from this experience and later in PTE1 carried out a similar lesson with a different class. Here I organised groups better because I knew the

pupils and I also provided printed tables for pupils to write the answers of the questions on, this was something I didn't do for the 'circus of forces' with the original intention of them using their books but forgetting to ask them to take the books with them before standing by a station. I am now aware from experience that having these printed tables would have more likely reinforced the learning and it proved a success the next time I used the approach (see evidence).

In future I could develop in conjunction with a table a copy of each of the questions with space to write answers. This would have been helpful as I had prepared rest stations between the 6 to give the pupils time to think, but by not having the questions to reflect upon it was more likely that it hindered continuous engagement. This improvement will more likely create a task that encourages pupils to regularly assess how the activity is helping them gain understanding as highlighted by Olusegun (2015).

Recommendations

It is clear from assessing my progress there is room for improvements in successfully delivering across the three pedagogical principles highlighted. Regarding AFL I aim to get pupils to think more deeply and critically by developing critical thinking questions while producing lesson plans. From this target I hope to develop pupils who show greater knowledge depth and attain more skills to apply this knowledge across contexts. Following this is the development I further hope to achieve to get pupils to grow their cross-curricular skills that in particular reference to the LNF and DCF meet 2022 curriculum expectations.

From this study I have decided to trial the use of excel in future 9A lessons to develop graphs and make calculations, not only improving my skills in carrying out cross-curricular activities but to ensure pupils are familiar with these important life skills. I will also look to develop more homework literacy tasks preventing loss of valuable lesson time so to advance science skills. Lastly, in order to develop delivering constructive lessons I aim to ensure pupils are given tasks that maintain engagement throughout and constantly look to encourage pupil assessment in understanding the subject throughout the task, also serving as an AFL tool. I will also look to expand my knowledge and experience in the range of other teaching approaches available and appropriate to teach KS3 and 4 science.

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