Prifysgol Cymru
Y Drindod Dewi Sant
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Design and present an academic poster applying theoretical models of cross-curricular teaching to the incorporation of literacy, numeracy and digital competence as cross-curricular responsibilities.

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Introduction

The aim of this poster is to exemplify the inclusion of literacy, numeracy and digital competence within theoretical models of cross-curricular pedagogy. Within this poster I will be developing two cross-curricular approaches by implementing two of Barnes' (2015) models for cross-curricular teaching.

A cross-curricular skill can be described as a transferable skill that can be used in a range of contexts (Safta, 2015). These twenty-first century skills support learners as they navigate confidently and successfully through the modern world (Welsh Government, 2019). The Welsh Government state that literacy, numeracy, and digital competency should be included in all areas of learning and experience (AOLEs) as cross-curricular responsibilities. This provides learners with the opportunity to master these skills in a variety of contexts.

Donaldson (2015) described literacy and numeracy as being vital in setting the foundations of all aspects of education. Donaldson progresses to discuss the fundamentality of literacy as a skill, with language being a key element of thinking. It is further discussed that numeracy is essential to allow young people to live independent lives. Perhaps more essentially, Donaldson highlights the demand from employers for young people with strong numerical skills to continue with the development of technology in the workplace. The author further depicts the importance of digital competence in the ways in which young people network, communicate and entertain themselves, thus promoting digital competence as a valuable twenty-first century skill alongside literacy and numeracy.

Barnes (2015) classified eight types of cross-curricular teaching, each with different aims and purposes. It is suggested by Barnes that the practitioner should select up to three areas of learning for each cross-curricular project. This is to ensure that the integrity of the project is not compromised whilst progression is being encouraged throughout.

Inter-disciplinary cross-curricular teaching and learning. Humanities and the Expressive Arts

The inter-disciplinary method aims to aid progression in two or more areas of learning (Barnes, 2015). Barnes explains that this method focuses on making connections between areas of learning and thinking creatively. This method was chosen to combine the AOLEs of the Expressive Arts and the Humanities to develop a Year Six Class' understanding of World War II, in a project lasting one week. Both AOLEs are of equal importance in this project and pupils are encouraged to form a collaborative response, Barnes suggests that this method is often used for such activities.

Pupils will be working in groups of up to 6, as supported by Freud's theory that group settings acknowledge children's emotional needs (Pound, 2006). They will be given the opportunity to choose their own groups, Pound also discusses Isaacs' theory that when provided with an environment of free choice, children will regulate their own behavior within the social group, allowing adults to become more familiar with the children, their personalities and their abilities. It could be argued that learners should be split into ability groups in order to tailor teaching to the needs of group (Ireson and Hallam, 2001). However, Ireson and Hallam also suggest that ability grouping lowers learners' expectations for themselves, conflicting with Donaldson's (2015) curriculum purpose of developing 'Healthy, confident individuals'.

Learners will then be asked to choose to either write a script or a song to perform based on an area of their choice within the topic of World War II which they will be digitally sharing upon completion. This element of the project supports the development of 'exploring challenging issues', within the speaking aspect of the Literacy area of the National Literacy and Numeracy Framework (LNF) (Welsh Government, 2014). In addition to this, discussing sensitive topics such as this promotes Donaldson's (2015) curriculum purpose of 'ethical, informed citizens'.

Once the literacy aspect has been decided, learners will be identifying which steps need to be taken in order to navigate through the task from beginning to end. This skill is featured in the 'identify processes and connections' element of the LNF (Welsh Government, 2014). The ability to apply skills when collaborating with others is a beneficial one to poses and practice regularly (Estyn, 2017).

It is fundamental that the content of the final product is historically accurate. In the research element of the project, a key skill to be developed is 'identify secure sites by looking for privacy seals of approval' within the 'identity, image and reputation' element of the Digital Competency Framework (DCF) (Welsh Government, 2008). Estyn (2017), highlight the importance of this skill, stating that learners should locate, select, and use information effectively.

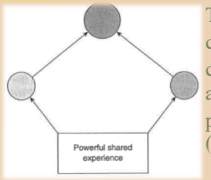
The final element of the project is the production of the performance. Learners will be performing, recording, uploading, and editing their projects before sharing them with the class. This will require the use of a range of hardware and software, a skill that has been identified within the DCF.



A group of children recording a song using a range of hardware and software (Personal Image, Newton Primary School, 2018).

Eighteen out of thirty-four of Byron's (2008) recommendations for keeping children safe online have not been implemented according to NSPCC (2018, pp. 5). If this is the case, it is not clear if an online environment is a safe place for children.

Many schools and do not have sufficient funding to provide the newest technologies (BBC, 2018). This may result in the compromise of the development of digital competence skills.



The inter-disciplinary cross-curricular method models the culmination of two or more areas of learning using a powerful, shared experience (Barnes, 2015, pp. 73).

Single Transferable Subject Learning Humanities

The Single Transferable Subject method aims to progress learning in a single subject or area of learning (Barnes, 2015). Barnes describes that this method focuses on the subject instead of an experience. The author depicts that this method provides original perspectives due to the particular combination of subjects. This method was chosen to promote the Humanities AOLE across the Year 6 curriculum, focusing on World War II. This unit of study would last for approximately one week.

Expressive Arts
Within the Expressive Arts AOLE, learners will be developing their ability to explore challenging issues through role-play. This skill is featured within the speaking element of the National Literacy and Numeracy Framework (Welsh Government, 2014). The task will require learners to improvise different scenarios that may have occurred in WWII, for example, an underage boy wanting to go to war.

Health and Wellbeing
Within the Health and Wellbeing AOLE, learners will be exploring the benefits and risks of sharing personal information online. This skill is featured within the Identity, Image & Reputation element of the Digital Competency Framework (Welsh Government, 2008). Pupils will be asked to research Anne Frank in order to create an online profile for her. Discussion points will include what personal information should not be shared online and why.

Mathematics and Numeracy
In the Mathematics and Numeracy AOLE, pupils will be using mental and written strategies to plus and minus numbers including decimals, as mentioned in the National Literacy and Numeracy Framework (Welsh Government, 2014). Learners will focusing on rationing. They will be provided with different scenarios, with different budgets. Learners will be calculating what they can afford, and giving their reasons for different purchases. Scenarios could include a family with a small budget, wanting to celebrate one of the children's birthdays, what can they afford?

Science and Technology
In the Science and Technology AOLE, pupils will be exploring the positive and negative aspects of different forms of communication, as mentioned in the Digital Competency Framework (Welsh Government, 2008). Pupils will be basing their exploration on Morse Code. They will be working in pairs to create a circuit board and develop their own code to send messages to each other. Once a code is established, pairs will merge to attempt to crack the codes.

However, it is vital that the practitioner models the task well and joins in the task to encourage the use of key vocabulary (Gross, 2013). This is Assessment for Learning.

Talk has been described as being an essential skill for children's thinking (Didau, 2014)

Many children have the confidence to use the internet independently, however, they may not yet have the maturity to use it safely (Byron, 2008).

How to react to both safe and unsafe situations with regard to online safety is a vital skill for young people in the twenty-first century (Welsh Government, 2019).

Money is a good area to use to improve learners' understanding of decimals (Ryan & Williams, 2007).

Making unusual connections, for example, between numeracy and WWII, promotes curiosity in the learner (Pound & Lee, 2011). The author states that this will help to prevent negative feelings toward mathematics from arising.

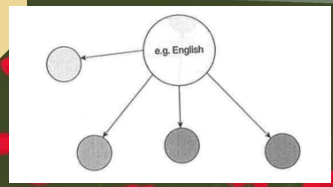
It could be argued that pupils should be learning about the technology of the future, not the past (World Economic Forum, 2018). However, the source also discusses the need for creative, problem-solving tasks, such as this, to prepare children for the future.

Conclusion

Donaldson (2015) promotes cross-curricular learning by identifying literacy, numeracy, and digital competence as essential twenty-first century skills that should be developed wherever possible. Furthermore, the World Economic Forum (2018) highlights the importance of developing creative, problem-solving learners in order to fulfill future roles in employment.

However, this method of pedagogy does require practitioners to closely monitor the learning when it is occurring (Gross, 2013). This Assessment for Learning technique means that the teacher must be ready to join in with practical learning tasks to ensure that learners stay on the right track, and use suitable vocabulary. Additionally, in order to support and promote learners' development of their digital competence skills in a way that prepares them for the future, schools will require advanced technology. This is an aspect that Wales may not be prepared for as many schools do not have access to sufficient funding to provide such resources (BBC, 2018).

When all viewpoints are considered, it is evident that there certainly is a need for cross-curricular pedagogy in the Welsh curriculum. The modern World is rapidly progressing and it is vital that learners in Wales are as prepared as possible for what lays ahead of them.



The Single Transferable Subject Learning method aims to improve the understanding of one subject by applying its perspective across the rest of the curriculum (Barnes, 2015, pp. 69).

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