

Looking forward: A critical analysis of literacy, numeracy and digital competency as cross-curricular responsibilities.

This essay will critically analyse the role of cross-curricular teaching and learning within the changing curriculum in Wales, with particular focus on the benefits and challenges of integrating literacy, numeracy and digital competency as cross-curricular responsibilities. This will be considered in relation to the current proposed curriculum reform in Wales; drawing upon relevant research, theory, documentation and personal experience. Recommendations will then be made on how to move forward with this, both personally as a practitioner and for the wider educational context.

Before analysing the three responsibilities, it is first important to have a clear understanding of what is meant by 'cross-curricular'. Barnes (2015) states that cross-curricular learning occurs when 'the skills, knowledge and attitudes of a number of different disciplines are applied to a single experience, problem, question, theme or idea.' This is supported by Savage (2011), who highlights the need for 'sensitivity towards and a synthesis of' these three aspects of various disciplines. However it could be argued that there is some disparity between these two definitions, since Barnes' (2015) cross-curricular models do not all necessarily make direct links between disciplines. For example, in the multi-disciplinary model, subjects remain separate from each other. Furthermore, Fogarty (2009) identifies ten different levels of cross-curricular learning ranging from connecting topics within a discipline to the learner directing the integration process themselves. Hayes (2010) highlights these challenges of a lack of clear definition and understanding of the term, comparing it to that of the term 'creativity'. It is important to recognise this when considering curriculum changes. Without a united and clear definition of what it is to implement a cross-curricular responsibility, tenuous links may be made and progression may be compromised.

Cross-curricular learning is rooted within the history of education. As Barnes (2015) highlights, the elements that underpin cross-curricular approaches can be seen within ancient Greek society. Many of the central ideas of the leading educational theorists of the 20th century can be linked to the core values of cross-curricular learning, especially relating to social learning (Steiner, 1919; Bruner, 1960; Vygotsky, 1962). The Plowden Report (DES, 1967) stated that segmenting the curriculum into subjects was having a negative effect on children's learning, and that teaching and learning should cross such boundaries. These recommendations were adopted widely, resulting in what is now known as the 'project work' of the 1960s and 1970s (Hayes, 2010). Whilst this approach proved its worth when adopted effectively (Callaghan, 1976), concerns were also raised that the lack of clear expectations and guidelines for teachers were resulting, perhaps, in what Barnes (2015) refers to as 'a bland broth of half-understood ideas and new misconceptions'. This resulted in the introduction of the National Curriculum leading to the current situation in Wales where creative teaching and learning approaches which have proven to be effective, are stifled or ignored due to an overcrowded curriculum (Donaldson, 2015) and the pressure of a 'target driven culture' (Barnes, 2015). The Rose Review (Rose, 2009)

challenged this, suggesting a cross-curricular approach consisting of six 'areas of learning'. Donaldson (2015) adopted this structure, recommending six areas of learning and experience; with literacy, numeracy and digital competency as cross-curricular responsibilities.

There is a wide range of existing research that supports a cross-curricular approach to teaching and learning. It is estimated that 65% of current primary school children will work in jobs in the future that do not yet exist (WEF, 2016). In this rapidly changing society the National Curriculum has become outdated (Donaldson, 2015) and there is a requirement for one that will be able to adapt and move with society (WG, 2017). Cross-curricular learning allows for the future, while the current curriculum is built mainly around the present and past (Barnes, 2015). The WEF highlight sixteen skills that are required in the 21st century, some of which include;

- Literacy
- Numeracy
- ICT literacy
- Financial literacy
- Cultural and civic literacy
- Critical thinking/problem solving
- Creativity
- Communication
- Collaboration
- Curiosity
- Initiative
- Persistence/grit
- Adaptability
- Leadership
- Social/cultural awareness

All of these skills are encouraged and enhanced through a creative and cross-curricular approach to teaching and learning, where learning is placed in a meaningful real-world context. The prominent position of literacy, numeracy and ICT literacy on this list creates strong support for the recommendation of literacy, numeracy and digital competency as cross-curricular responsibilities.

One of the most significant changes in education, society, and across the world, is the development of the digital age. Teachers and parents have faced the challenge of monitoring and educating children on technology that they themselves are unfamiliar with. Children and young people are often far more skilled in working with these than their elders (Grigg, 2015). However Payton and Hague (2010) note that although children and young people may seem competent with a wide range of hardware and software, teachers have observed they often struggle with research skills. This was noted on professional teaching experience during a lesson where online research was incorporated. It had been assumed, since the children seemed so confident in using the class iPads during day to day school life, that they would be confident in researching their topic online. It soon became apparent that they had no

concept of how search engines work, using key words, how to judge a reliable website or how to use information made available to them. Many children engaged in what Payton and Hague refer to as 'copy and paste syndrome', while completely unable to explain words they had included in their digital presentations. The introduction of digital competency as a cross-curricular responsibility aims to address issues such as this, with emphasis on how to use emerging technologies and the development of skills required in a digital age. The digital competency framework has been designed so that it is not specific to current technology and can be adapted to the future of technology (WG, 2017).

Although it is impossible to ignore the digital future that our children face, particularly in relation to job skills, it is important to be aware of the wider consequences of reliance on digital technology for children and society. Wellbeing is a commonly used term in current discussions around education, with increasing concerns over the mental health and wellbeing of children and young people (The Children's Society, 2018). Perhaps most prominent, have been concerns over the effect of social media on the health and wellbeing of children and young people, noting increased levels of anxiety and depression, and more cases of cyberbullying (RSPH, no date; Wakefield, 2018). Increased time spent looking at screens at home results in less time that children are spending outside, engaging actively with the world. It is imperative that schools educate children about e-safety and responsible use of technology, however it seems increasingly important that schools provide children with time outside, away from any form of digital technology (Pretty, *et al.*, 2005). If this is the case, then it would mean that teachers must take care not to force digital competency as a cross-curricular responsibility into every possible opportunity, and give equal status to outdoor learning opportunities. Furthermore, outdoor learning provides another area for cross-curricular learning to take place and has been shown to improve children's confidence, wellbeing, self-esteem and motivation to learn (Bishops Wood Centre, 2005; Barnes, 2015).

With consistently low results in Wales on PISA tests, education in Wales has placed a heavy focus on improving literacy and numeracy standards, particularly with the introduction of the literacy and numeracy framework (LNF) (WG, 2013). Despite these efforts, Wales has not seen significant progress (Hume, 2016). Donaldson (2015) acknowledges this, recommending that it is not sufficient to teach the skills involved in mathematics purely in isolation, rather that children must be given opportunities to apply numeracy across the curriculum to different contexts in order to deepen understanding. This is supported by Pound and Lee (2010) who argue that although discrete teaching of mathematical skills is important, it should not be overemphasised at the cost of integrated numeracy skills, which bring purpose, relevance and meaning to children's learning. In one particular case study, Askew (2011) notes that when pupils were taken out of formal mathematics lessons but instead taught the skills as they appeared in other subjects, mathematical problem solving skills were significantly higher than those who had only learnt mathematics through discrete teaching. In addition to this, attitudes to and confidence in literacy and numeracy may be significantly improved as children who have negative attitudes towards these can work from their strengths or from engagement with a powerful,

shared experience. This was observed whilst volunteering in a school with a high percentage of children who were new to English. One individual had lacked confidence in speaking in the classroom, but during a visit to an aquarium he became so engaged and excited by the experience that he talked throughout the entire day, and continued to do so when relating back to the experience in the classroom. Teachers can find entry points for children where they are fully engaged, and introduce numeracy or literacy through the stronger subject (Barnes, 2015; Taylor and Harris, 2013). The child may not realise they are 'doing maths' but teachers can encourage by drawing attention to developed skills afterwards (Haylock, 2014). However this must be done with a clear understanding of how to embed the responsibilities, otherwise children may become frustrated that they cannot access a subject that they are usually confident in due to their lack of confidence in the partnered responsibility.

Clearly then, there is a case for numeracy across the curriculum. However, there are concerns regarding teacher subject knowledge in numeracy (OFSTED, 2005; Grigg, 2015; Haylock, 2014). Barnes (2015) is clear that to deliver any subjects in a cross-curricular approach, awareness of skills taught, subject knowledge and understanding of progression in chosen skills must be evident. A lack of confidence from the teacher in these areas may be at detriment to the children's progress in numeracy and other areas if tenuous links are made or clear learning is not planned or monitored. There is also a lack of understanding regarding how to implement the LNF (WG, 2015), with some teachers segmenting lessons by time to incorporate literacy and numeracy (Grigg, 2015) and therefore not integrating the skills at all.

In addition to this, the pressure on schools regarding these core subjects often results in a timetable dominated by Mathematics and English in the mornings, pushing the humanities and expressive arts into what time remains (Grigg, 2015; Donaldson, 2015). This was observed, for example, on professional teaching experience with a class that always had music planned in for a Friday afternoon. Children were often tired and restless at this point in the week, and could not give their full energy and focus to the tasks. Music was also often replaced with additional input on mathematics or literacy if the children had struggled with the skills that week, or had unfinished work. The integration of literacy and numeracy as cross-curricular responsibilities may not only improve standards in themselves, but in other areas of learning and experience as they allow more time in the week for them.

It is clear from reading, research and personal experience that there are many benefits to cross-curricular learning, and there is a strong argument for the integration of literacy, numeracy and digital competency as cross-curricular responsibilities. Cross-curricular teaching and learning provides a meaningful, relevant and real-world context in a changing society that requires a flexible curriculum. It is clear that standards of literacy, numeracy and digital competency need to be improved for the sake of the children of Wales and their future, and that this will greatly benefit them. However care needs to be taken to ensure that meaningful connections are made across disciplines and significant learning and progression takes places in all areas involved.

Moving forward with this, personal recommendations taken from this as a primary education practitioner include a need firstly, to improve subject knowledge and understanding, particularly relating to numeracy and digital competency in order to effectively deliver these as cross-curricular responsibilities. Care will also be taken to teach discrete digital competency skills addressing the 'how' and 'why', not only the 'what'. Cross-curricular pedagogy will be adopted, with careful consideration regarding what learning will take place in each discipline, what the progression of the skills are, sharing these with learners.

In terms of curriculum design and the future of education in Wales, it is recommended that the definition of what is meant by 'cross-curricular' is made clear and what the expectations of practitioners are in terms of implementing the responsibilities. As well as this, more guidance should be given on how to plan meaningful links between the responsibilities and the areas of learning and experience, particularly in relation to numeracy. It is clear that digital competency should be a central aspect of teaching and learning in Wales, but it should be undertaken with critical awareness from both teachers and pupils. It would be advisable to encourage greater emphasis on outdoor learning and warn practitioners against incorporating digital competency at every opportunity, for the sake of the mental health and wellbeing of children.

Finally, all must ensure that the child's voice and their best interests are at the heart of all curricula decisions, both on a macro and micro level. As Barnes (2015) concludes, the teacher is in the best position to understand the child's world and context, knowing the child's voice and understanding what helps them to learn.

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