

Module code: ECAD40-15

Student name: [REDACTED]

Student number: 2403628

AI Acknowledgement

I confirm that I have not used any AI tools in the research and creation of this assignment.

I confirm that I have not presented any AI generated materials as my own work.

I confirm that I have copies of my drafts, notes, and other resources I used, which I may be asked to provide in evidence.

Demonstrate how cross-curricular teaching and learning can influence in-depth skills and understanding. Underpin this with reference to relevant research, a detailed lesson plan and an enhanced provision material.

Pre-dating the current curriculum, the Cross-Curricular Skills Framework focuses on the key areas of literacy, numeracy and digital competency. It is the “mandatory [...] responsibility of all practitioners”, not subject specialists (Welsh Gov, 2022a). Supporting integration of these essential skills the Literacy and Numeracy Framework (LNF) and Digital Competency Framework (DCF) were updated with the 2022 Curriculum for Wales. Both frameworks and the curriculum proved compatible as each stemmed from suggestions within Donaldson’s (2015) Successful Futures review. Fostering these skills is the responsibility of all teachers thus across all ages. Therefore, the LNF and DCF offer ‘ABC’ pre-progression steps (before the 5 core Progression Steps) to begin scaffolding these skills from pre-reception age to beyond primary schooling.

Increased focus on cross-curricular learning within Curriculum for Wales (2022b) produced a model for primary teaching set apart from previous multidisciplinary approaches. Emphasis on integrating a range of key subjects during activities results in a trans-disciplinary approach, one where the primary teacher handles delivery of each Area of Learning and Experience (AoLEs) through an integrated framework (always alongside the Cross-Curricular Skills). Whereas secondary educators continue to deliver distinct individual subjects, primary cross-curricular flexibly recognises thematic links across subjects to facilitate a wider breadth of learning (Davies-Barnes *et. al.* 2020). By removing traditional boundaries between subjects educators may foster interconnected, knowledge rich experiences which current pedagogy argues to hold greater holistic value to development (Kreijkes, Grooten, 2024). Indeed, one of the Twelve Pedagogical principles outlines making connections across the AoLEs as essential to quality learning (Welsh Government, 2023). Qualitative studies may recognise this freedom in teachers planning

results in higher levels of child-centred learning, weaving themes around learners needs and interests opposed to ‘force-feeding’ static topics (Havely, 2024).

Cross-curricular philosophy like all of the curriculum is underpinned by adherence to the Four Purposes. To foster ambition and lifelong capability cross-curricular teaching links together knowledge areas to create that more holistic perspective which is suggested to support true, lifelong understanding. Enterprising and creative contributions from learners are arguably better supported by cross-curricular as Expressive Arts and business skills (Health and Wellbeing) can be freely integrated throughout the learning journey. Similarly, raising healthy and confident members of society is greater supported by teachers wider freedom to incorporate physical, emotional and mental wellbeing into the learning (Barbosa *et. al.* 2020), while once again the integrated approach creates that holistic foundation for inspiring fulfilled members of society. Furthermore, the very nature of ethical and informed citizens perhaps necessitates interdisciplinary inquiry, removing subject boundaries allowing learners to forge connections, ask questions and explore meaning across every aspect of their world (Hickman, Kiss, 2010).

Educators must constantly consider how to exploit activities, trips, events and resources to engage with a wider range of AoLEs, with inclusion of key cross-curricular skills throughout a mandatory consideration (Welsh Government, 2023). Reference to the AoLEs Descriptions of Learning outlines how progression along the learning continuum should be made. Combining Descriptions of Learning from different AoLEs that complement a given task teachers may scaffold cross-curricular subject learning that blends organically (Drake, Reid, 2018). The importance of literacy (listening, reading, writing, and speaking), numeracy (using numbers and solving problems in real-life situations) and digital competency (using technologies to communicate and understand the world) in particular is that they are foundational to achieving the Four Purposes, while also transferable into the workplace and lifelong learning (EqualEducation Partners, 2023). Therefore, the learners must have “frequent opportunities to develop, extend and apply [cross-curricular skills] across the curriculum” (Donaldson, 2015, p.40).

A significant challenge to these aims may be practitioners lack of confidence in a skill or subject, resulting in hesitancy to explore it sufficiently, e.g. dislike of mathematics (Rogers, 2021). In this instance cross-curricular flexibility may allow unfavoured subjects to be largely ignored in planning. Indeed, even without bias equally weighting subjects can be challenging with such a wide subject range to consider (Sibieta, 2024). However, with the in-depth Curriculum for Wales framework – Statements of What Matter and Descriptions of Learning – Welsh Government (2022b) may propose that subjects are in sufficiently manageable steps for all educators to confidently navigate. Moreover, numerous schools (many highlighted by Estyn for exceptional practice and those observed by this author) partake in whole-school thematic planning. One example of a whole-school theme from Ysgol Cwm Banwy was planning and development of a garden (Estyn, 2024). From this three focus areas were established – Numeracy, Well-being, Science and Technology – exemplifying a cross-curricular subject spread. Such whole school planning implies teachers are supported by colleagues to establish a cycle of themes which will ensure cross-curricular aims remain balanced overtime (Kerry, 2010).

Another challenge to effective cross-curricular teaching may be resource access. Whilst true for all areas of learning, developing digital competency suffers most greatly with reliance on technology access. Many foundational digital skills can be explored with limited technology (e.g. early programming/coding through sequencing information/images), yet the need for access to technology is largely inescapable after advancement through the progression steps. However, realistic consideration of modern classrooms may find a lack of access to technology to be of diminishing concern (Estyn, 2022).

Cross-curricular skills in their flexibility may be applied within ‘authentic and purposeful learning’ opportunities, which Welsh Government (2023) outlines as a key element of primary pedagogy. Without the restriction of defined subject disciplines, cross-curricular skills are free to be adapted (alongside AoLEs) into real life, authentic experiences. An outstanding example from Cadogton School demonstrates the idea of a ‘village’ in the classroom as a facilitator for authentic interactions and play that exercised

the key cross-curricular skills (Estyn, 2018a). The most simple key skills developed were vocabulary of a new location and communication during role play (Literacy), practical numeracy used in a shopping scenario and digital research skills when pupil voice expressed interest in expanding the scene further. Indeed, evidence of pupil voice being able to so easily shape the learning experiences suggest that the flexible outcomes of cross-curricular learning may well enhance the prescriptiveness of learning (Estyn, 2018b; Greenwood, 2019). This is just one demonstration of the opportunities for learning that real world/authentic experiences offers as a consequence of blending cross-curricular ideas.

Furthermore, many exemplary school practices using a repeated cycle of school wide themes to service the demands of cross-curricular learning highlight the benefit it offers to motivating progression (Estyn, 2018a; 2024). Each year group is able to compare their learning and skills to that of the group above, encouraging learner independence as they work together and gain advantage from one another's expertise. Additionally, teachers will find that assessing learners progress across their school careers will be more natural and purposeful, focusing on learners whole output instead of individual performance in isolated areas of learning and skills (Taylor, 2015, p. 55).

Whole school thematic planning may scaffold the overarching subject areas for a set period of learning, yet the AoLEs, LNF and DCF steps of progression are also to be drawn upon to ensure cultivation of skills in day-to-day learning. This author, considering these guidelines, has produced a nursery targeted provision for an enhanced task. The class theme influencing my resource is 'Pirates', the resource itself based around digging for treasure. In brief, pebbles of differing sizes have been painted to look like gold/silver/bronze coins, each with numbers 1-10 clearly displayed, with the size of the pebble corresponding to size of the number (see Appendix A). These are to be 'treasure' buried in tough trays filled with different materials (e.g. earth, sand, shaving foam). The learners are provided with 'treasure map' learning mats on which they are required to place the numbered stones over their corresponding images on the mats (see Appendix B). There are a variety of mats for differing levels of ability when sequencing numbers and simple addition/subtraction to differentiate for more capable learners.

The key focus skill this task fosters is numeracy. The task exercises several areas of development on the Numeracy Framework; collection and representation of data, some concept of size measurement, introduction to financial literacy concepts, and especially communicating with symbols and familiarity with the number system (Welsh Government, 2022a). As this is targeted to a nursery cohort these are all based in C steps and progression step 1, with occasional reach into step 2 to allow opportunities for challenge. A great benefit of this resource is its similarity to guided sequencing tasks this author's class has engaged with before, taking the established skills into a thematic setting with increased opportunities for challenge and motive to engage (the exciting role play and messy play elements). Utilising the theme to incorporate basic financial concepts into the task introduces an element of authentic experience to the activity. Incorporating financial literacy was important as this author's observations found it (currency holding value equal to numbers) was a significantly underdeveloped understanding in this cohort. Moreover, at this early stage the combination of matching the numerical symbols on the relatively sized pebbles to the symbols on the mats aids in addressing young learners lack of conceptual understanding that larger numbers follow smaller numbers. As the activity is so tactile and uses many natural materials, some may suggest it is a very effective approach to solidify otherwise abstract numerical concepts (Coker, 2023).

However, whilst a sufficient introduction to size value of numbers, limitations when creating the resource (e.g. available materials, considering learners hand size to grasp) meant proportions are not mathematically correct. While this may limit more advanced accuracy, to cement basic concepts this author's opinion is that it is sufficient. Equally a challenge may be made that the pebbles are not an accurate depiction of currency to develop the learners financial literacy. Indeed, use of real or more accurately representative coins are discussed within the Numeracy Framework (Welsh Government, 2022a). However, real currency does not have a physical size to numerical value correlation which this task aims to cultivate. Therefore, considering the experiences of the cohort, this element of the resource retains an introductory value to the discussion of currency of which most learners will have had no to little experience.

As for cross-curricular literacy skills, development relies on two elements. Firstly, organic interactions between learners during the play, tough trays placed so small groups can engage at once and discuss their experiences (National Literacy Trust, 2024). Secondly, there is little opportunity for literacy development designed into this task beyond the facilitating of a teaching assistant around the learners, modeling vocabulary and prompting simple questions/discussions (e.g. mathematical language, pirate theme vocabulary, language relating to the other AoLEs). At nursery level learners interaction with the learning mats, recognition of pictorial information to follow the sequencing task offers an example of literacy skills. Although limited, this demonstrates how different subject skills (number sequencing - Numeracy) can so easily overlap with other learning outcomes (following pictorial instructions - Literacy). Indeed, at very foundational levels cross-curricular approaches can allow simple tasks such as these to encompass many skills at once (Estyn, 2023). With digital competency's 'understanding data and computational thinking' B and C steps, the matching of items to pictorial images and grouping objects by attributes again holds developmental merit.

Ultimately, the key focus of the task is numeracy, so lower levels of literacy and digital competency focus can be expected, with greater areas of crossover coming from Science & Technology (ST) and Health & Wellbeing (HW) AoLEs. Not only to grasp and place the pebbles, but holding tools (plastic shovels, brushes, etc) to dig in the tough trays all exercise key fine motor skills and understanding of the body in relation to equipment (NHS, 2024). Moreover, use of different tools to curiously explore the different materials in the learners environment, following the sequence of pictorial instructions, all helps satisfy the fundamental experiences of the ST AoLE, curiosity and exploration (Welsh Government, 2022b).

In summary, the key Cross-Curricular Skills of literacy, numeracy and digital competency underpin the learners ability to achieve the Four Purposes of the Curriculum. More immediately however, these skills allow learners to confidently explore the subject AoLEs, blended too in a cross-curricular model to provide a holistic, interconnected learning experience. Consequently, when planning for learning educators must first

consider the fundamental cross-curricular skills, how they will feed into an appropriate blend of AoLEs which take cues from the overarching (often school-wide) themes that together support pursuit of the Four Purposes. Considering these factors, this author will set two aims for their own classroom practice.

Firstly, during planning of activities one will always aim to start from the key cross-curricular skills, layering thematic setting and fun elements over a core foundation that looks to develop at least two areas when three is not possible. Too easily one may get distracted by the exciting elements of class activities, focus too heavily on the overall theme or even on the Four Purposes, losing sight of those necessary foundations skills (something more immediately relevant at foundation learning where skills must first be cultivated). Secondly, when the activity itself lacks focus on a certain cross-curricular area, then the instruction of the adult facilitator becomes even more key. Modeling actions and vocabulary, prompting discussion and routes of enquiry are often undervalued methods to support skill development in learners, especially as a form of differentiation when either supporting a struggling learner or pushing their attainment further on towards actualisation of the Four Purposes.

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Appendix

- **Appendix A** – Pebble coin counters mock-up



- **Appendix B** – Sequencing ‘treasure map’ learning mats





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▪ **Appendix C** – Lesson plan with enhanced provision focus

Student-teacher:		Class / Group:	Nursery
AoLE or Subject:	Mathematics and Numeracy	Date:	14/2/2025
Meaningful links to Curriculum (What Matters Statements, Descriptions of learning, 'previous' curriculum...)	<i>Statement of What Matters – The number system is used to represent and compare relationships between numbers and quantities.</i> Progression step 1 - I can notice, recognise and write numbers in a range of media, through a multi-sensory approach, from 0 to 10 and beyond. - I can use mathematical language to describe quantities, and to make estimates and comparisons such as 'more than', 'less than' and 'equal to'. - I have experienced the counting sequence of numbers in different ways, reciting forwards and backwards, and starting at different points. - I can use my experience of the counting sequence of numbers and of one-to-one correspondence to count sets reliably. I can count objects that I can touch - I have explored forming a quantity in different ways, using combinations of objects or quantities. <i>Statements of What Matters - Geometry focuses on relationships involving shape, space and position, and measurement focuses on quantifying phenomena in the physical world.</i> Progression step 1 - I can make estimates and comparisons with measures, such as 'shorter than', 'heavier than'		
Meaningful links across the curriculum <i>Links to other AoLEs or the Cross-curricular skills frameworks</i>	<u>Science and Technology AoLE:</u> Progression step 1 - I can show curiosity and question how things work. - I can explore the environment, make observations and communicate my ideas. - I can safely use simple tools, materials and equipment to construct and deconstruct.		

	- I can explore the properties of materials and choose different materials for a particular use. - I am beginning to follow a sequence of instructions <u>Health and Well-being AoLE:</u> Progression step 1 - I have the confidence and motivation to move in different ways and I am beginning to develop control of gross motor movements and fine motor movements in different environments, moving safely in response to instructions. <u>Language, Literacy and Communication AoLE:</u> Progression step 1 - I can recognise and follow pictorial and/or spoken information and multi-step instructions about familiar topics and routines – (Literacy and Numeracy Framework) <u>Digital Competency Framework:</u> Data and computational thinking - B Step – I can match identical objects and images - C Step – I can group objects that share a specified attribute
Learning Intention <i>'This should focus on the pupils' learning during the lesson, rather than what they will be doing, and should be short, achievable and measurable.'</i> (Crichton, H., and Mcdaid, A. 2016 p. 196)	
To increase the learners' ability to identify numeral symbols 1-through-10 and array them in sequence.	
Success Criteria <i>What the pupils need to demonstrate to successfully meet the Learning Intention.</i>	
- Learners should be able to identify most numerals by name when viewed in isolation - Learners should be able to point to and identify each numeral whilst they count along a number line sequence	
Planning for misconceptions: <i>Use this section to anticipate pupil errors and misunderstandings and your planned responses to them.</i>	
o A common misconception identified previously is confusion between similar numerals (i.e especially 1 and 7). To respond to this the resources used during the session will use tokens of relative size to support learners in rationalising the actual value difference between the symbols.	
Strategies for Welsh language development	

- The resourced used for the task supports bilingual teaching. When an adult engages with a learner participating in the sequencing element of the activity, alongside encouraging the learner to count out their sequence in English they should also be encouraged to count their numbers in Welsh.

SEQUENCE OF TEACHING & LEARNING

Timing: Break down timings into groups if appropriate, ensure pupils are 'doing' quickly and that transitions are taken into account.	Role of the teacher & support staff: e.g., key questions, retrieval of prior learning, modelling and explanations, checking understanding, planned use of additional adults. Choice of pedagogical model or of the 12 pedagogical principles	Pupils' learning and activities: What will the pupils be learning to do and what activities / resources will facilitate this? Please refer to Foundation Learning planning document for details of continuous provision.	Inclusive Strategies (including differentiation): Reasons for and details of scaffolding. Types of representation in tasks.	Check what pupils know, understand, and can do: Key questions, types of retrieval practices, self and peer assessment opportunities, purposeful Afl strategies, live marking opportunities, planned feedback.
10 minutes	Class teacher – facilitating activity by reading book with the class.	Incorporating the class theme (pirates) with an introduction to the sessions focus (counting up to 10) through shared reading of the book 'Ten Little Pirates' – Mike Brownlow.	Ensure teaching assistants are sat with select learners who struggle with speech and language. TA's may model any spoken responses expected by the learners during shared reading, or any movements that punctuate the story (e.g. counting down on their fingers as the pirates drift away) to encourage these behaviours from those learners who otherwise may struggle to follow along. Representation – story book selected includes a cast of characters reflecting a wide range of races.	At each opportunity ask the learners "and how many are left now?" as the number of pirates are counted down.
30 minutes	Class teacher and teaching assistants facilitate and observe, allowing learners to carry out the task independently, only interjecting to support learning with questioning and checking	The pupils will be learning to sequence single digit numbers. The activity to achieve this will involve learners exploring tough trays filled with different materials (e.g. sand, soil), finding pebbles numbered 1 to 10 and then placing these accordingly along number lines.	To differentiate numeracy abilities the learning mats that pupils will use to place and sequence the numbered pebbles will be varied; 1 to 5 1 to 10 Sums To encourage Welsh language, facilitating adults may prompt less capable speakers to count their	Phrases facilitating adults may use to check learning: - What number comes next? - Which number comes before? - Is this number bigger or smaller than x? Ultimately having the pupils count along their completed number

			number lines up to 5 in Welsh, whilst more adept may count to 10.	lines, to check their understanding of what the symbols represent and provide an opportunity if their sequencing is incorrect for them to realize that independently as they count.
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