

The Silent Digital Revolution in Education (ECIE6002)



(Microsoft, 2026b)

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(Microsoft, 2026)

Riding the Digital Dragon: Navigating Digital Skills in the Welsh classroom

For generations, education in Wales has emphasised literacy and numeracy, with success often measured by a child's ability to read, write, and solve mathematical problems. However, the late 20th century ushered in a digital revolution. The rise of the

internet opened access to a vast world of information, and advances in personal devices, virtual reality, and online learning have made digital technology an integral part of everyday life.

As a result, digital competence is now as essential as literacy and numeracy in preparing children to become capable, confident citizens of Wales. The Welsh Government (2018) defines digital competence as “the set of skills, knowledge and attitudes that enable the confident, creative and critical use of technologies and systems.” After all, **what use is being able to calculate a monthly shopping budget if you cannot log in to your banking app?**



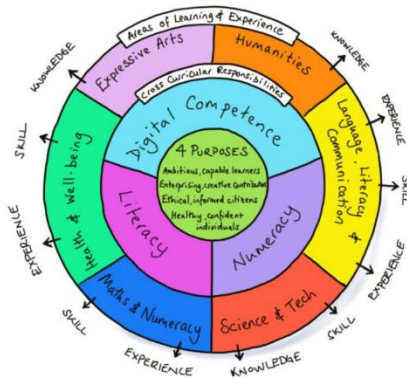
(FREEP!K, 2025)

As Negroponte (1995) aptly stated, “Computing is not about computers anymore. It’s about living.”

The purpose of this blog is to take a closer look at the Digital Competence Framework (DCF),

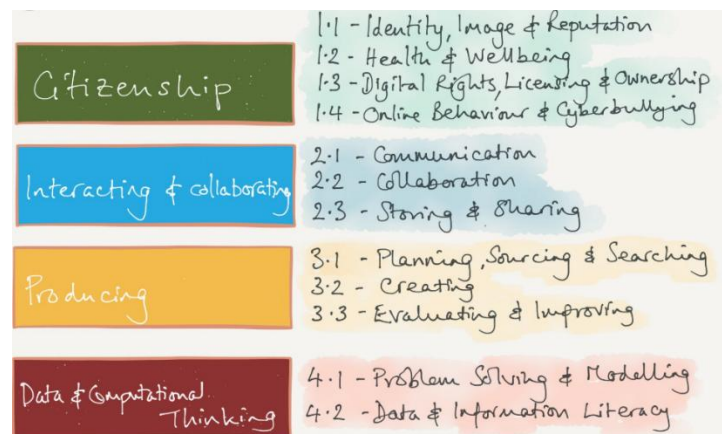
Does it support learner’s digital literacy progression and meaningful cross curricular and real-world applications?

The structure of the Digital Competence Framework

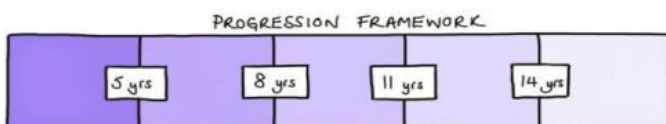


(Ysgol y Llan, 2022)

The Framework is built around **four strands**, each playing an important role in enabling learners to thrive in a digital world. Together, they ensure digital skills are embedded throughout the curriculum rather than taught in isolation, emphasising the meaningful application of digital skills, **not solely within ICT lessons!**



(Impact Wales, 2025)



(Ysgol y Llan, 2022)

Progression within the Digital Competence Framework is organised around **five progression steps** that are not rigidly aligned to age. This recognises that learners develop skills

at different rates and supports inclusive practice. By breaking progression into small, adaptable steps, educators can design learning experiences responsive to individual strengths and needs (Welsh Government, 2018).



Click here to explore the Digital Competence Framework

<https://hwb.gov.wales/curriculum-for-wales/cross-curricular-skills-frameworks/digital-competence-framework-dcf>

Strengths & Limitations

The structured approach of the DCF offers a clear framework, but the learner friendly statements within the progression steps are often so broad that they risk becoming vague and ambiguous. This can make it difficult for staff to assess progress and for learners to understand expectations. Schools therefore need a clear vision for DCF implementation, including mapped progression and continuity (Estyn, 2024).

The importance in education is clear, digital competence can support learning across all subjects enabling children to.....



Why does digital competence matter?

- ✓ **Research effectively** using online and multimedia resources
- ✓ **Communicate learning with peers & staff** through digital presentations, blogs or podcasts
- ✓ **Solve problems & develop critical thinking** through coding, simulations & data analysis
- ✓ **Collaborate on projects** in person & virtually creating a digital magazine, in expressive arts, or co-designing a science experiment
- ✓ **Prepare for digital realities** of further learning and work such as preparing spreadsheets and professional emails

Despite the benefits, digital competence is sometimes perceived as secondary to literacy and numeracy. Limited resources and teacher confidence can hinder the effective implementation of a genuinely cross curricular approach. Although the Welsh Government's development and dissemination of the Digital Competence Framework represent an important step forward, this alone is insufficient. Much like learning to drive, ***you can read the manual, but you won't pass the test unless you actually get behind the wheel.*** Meaningful competence can only be developed through practical experience. Teachers require

(Dreamstime, 2025)



sustained professional learning and access to quality resources to develop their own skills and to embed the framework confidently (Estyn, 2018).

Talking the talk: Communication Across the Curriculum



(EuroSchool, 2023)

Most children can send voice notes, and memes with impressive fluency, often leaving adults feeling firmly rooted in the digital dark ages. However, fluency alone does not equate to effective digital communication. In response the DCF embeds a specific **Communication** element within the **Interacting and Collaborating** strand (Welsh Government, 2021).

Learners send emails in literacy, collaborate on shared documents in humanities, and produce podcasts to communicate acquired knowledge. Science pupils might create infographics summarising experiment results, while geography students could use mapping software to present fieldwork. These activities take place within safeguarded environments such as Hwb or Google Classroom, aligned with individual school ICT policies, which protect from inappropriate or unwanted content. The five progression steps within the framework support learners on a developmental journey, moving from recognising different forms of digital communication to confidently selecting appropriate communication tools for a specific purpose.



(Hwb, 2014)



(Google, 2025)

While this approach develops skills such as professional emailing, collaboration, and online etiquette, it also invites critical reflection. Highly sanitised classroom tasks where learners communicate with approved contacts and within carefully controlled contexts may limit opportunities for learners to engage with the complexity and unpredictability of digital communication beyond school.

The DCF reflects **social constructivist principles**, emphasising learning through interaction and dialogue (Vygotsky, 1978). However, **situated learning theory** suggests learning is most effective when it takes place within authentic and meaningful contexts (Lave & Wenger, 1991). This

highlights a potential tension between the structured safety of classroom environments and the need to prepare learners for real world digital challenges.

In conclusion, the Digital Competence Framework supports learners' digital literacy progression through its structured strands. Although sometimes vague, there is an inclusive element to the flexible progression steps, enabling skills to develop over time and across contexts. When implemented effectively, it also has the potential to link meaningfully across all areas of the curriculum and reflect real world digital applications. However, this potential is not always fully realised in practice.

For the DCF to prepare learners for life beyond school, we as educators must design authentic and realistic learning opportunities and move beyond overly controlled tasks. This requires us to remain up to date with our own digital competence, engaging in ongoing professional learning to confidently model and embed meaningful digital practice across the curriculum.

Reference list

- Canva (2025). *Canva*. [online] Canva. Available at: <https://www.canva.com/> [Accessed 21 Dec. 2025].
- Dreamstime (2025). *Scared Driving Stock Illustrations – 195 Scared Driving Stock Illustrations, Vectors & Clipart - Dreamstime*. [online] Dreamstime. Available at: <https://www.dreamstime.com/illustration/scared-driving.html> [Accessed 22 Dec. 2025].
- Estyn (2018). *The Annual Report of Her Majesty's Chief Inspector of Education and Training in Wales Estyn Annual Report 2*. [online] Available at: https://estyn.gov.wales/app/uploads/2024/08/ESTYN-Annual-Report-2020_ENG.pdf?utm_source=chatgpt.com [Accessed 22 Dec. 2025].
- Estyn (2024). *Preparing for the Digital Competence Framework (DCF) - Estyn*. [online] Estyn. Available at: https://estyn.gov.wales/improvement-resources/preparing-for-the-digital-competence-framework-dcf/?utm_source=chatgpt.com [Accessed 21 Dec. 2025].
- EuroSchool (2023). *Harmful Effects of Mobile Phone on Children & their Health*. [online] EuroSchool. Available at: <https://www.euroschoolindia.com/blogs/harmful-effects-of-using-mobile-phones-on-children/> [Accessed 23 Dec. 2025].
- FREEP!K (2025). *Confused woman working on laptop cartoon icon illustration. people technology icon concept | Free Vector*. [online] Freepik. Available at: https://www.freepik.com/free-vector/confused-woman-working-laptop-cartoon-icon-illustration-people-technology-icon-concept_10764015.htm [Accessed 21 Dec. 2025].
- Google (2025). *Classroom Management Tools & Resources - Google for Education*. [online] Google for Education. Available at: https://edu.google.com/intl/ALL_uk/workspace-for-education/products/classroom/.
- Hwb (2014). *Hwb*. [online] Gov.wales. Available at: <https://hwb.gov.wales/> [Accessed 23 Dec. 2025].
- Impact Wales (2025). [online] X (formerly Twitter). Available at: <https://x.com/ImpactWales/status/758549399635161088/photo/1> [Accessed 21 Dec. 2025].
- Lave, J. and Wenger, E. (1991). *Situated learning: Legitimate Peripheral Participation*. Cambridge: Cambridge University Press.

Microsoft (2026a). *Child riding a dragon whilst using a laptop*. [Digital Image] Available at: <https://copilot.microsoft.com/chats/sb8wXZ4TeGRwobWAYfVo9> [Accessed 3 Jan. 2026].

Microsoft (2026b). *dragon with digital technology*. [Digital Image] Available at: <https://copilot.microsoft.com/chats/XYQvR3MvzNMZdEZXM4FA4> [Accessed 3 Jan. 2026].

Negroponte, N. (1995). *Being digital*. New York: Knopf.

Vygotsky, L. (1978). *Mind in society: the Development of Higher Psychological Processes*. Harvard University Press.

Welsh Government (2018). *Digital Competence Framework guidance*. [online] Available at: https://hwb.gov.wales/storage/337437b8-cfe3-4305-ae32-f47ad82f3e76/digital-competence-framework-guidance-2018.pdf?utm_source=chatgpt.com [Accessed 21 Dec. 2025].

Welsh Government (2021). *Digital Competence Framework (DCF) - Hwb*. [online] Gov.wales. Available at: <https://hwb.gov.wales/curriculum-for-wales/cross-curricular-skills-frameworks/digital-competence-framework-dcf> [Accessed 23 Dec. 2025].

Welsh Government (2023). *Curriculum for Wales: overview*. [online] GOV.WALES. Available at: <https://www.gov.wales/curriculum-wales-overview#:~:text=ambitious%2C%20capable%20learners%2C%20ready%20to>.

Welsh Government (2018). *Digital Competence Framework Your questions answered*. [online] Available at: <https://hwb.gov.wales/storage/85f69bca-0134-426d-bff1-c46b4c1d067b/digital-competence-framework-your> [Accessed 18 Dec. 2025].

Ysgol y Llan (2022). *Curriculum for Wales*. [online] Ysgol y Llan Growing and Learning Together through Faith, Friends and Fun. Available at: <http://www.ysgolyllan.co.uk/curriculum-for-wales.html> [Accessed 21 Dec. 2025].



(Microsoft, 2026)

The Dragon's Dilemma: Protecting and Empowering Young People Online in Wales

If you've watched a ten-year-old scroll through YouTube or TikTok, you'll know that children and young people in Wales are **not just using** the digital world, they are **growing up inside it**. Moving through online spaces with

confidence, often outpacing the adults tasked with guiding them. As digital technology evolves at breakneck speed, we must ask a crucial question. Should we encourage young people to explore these spaces freely to keep pace with a digital future, or should we be placing stronger safeguards around them to protect their wellbeing and keep them grounded in the world beyond the screen?

With almost half of Welsh children aged 7–11 using social media on a daily basis (School Health Research Network, 2023), young people are spending increasing amounts of time in digital spaces rather than the physical world. These environments are shaping behaviour, wellbeing, and health in ways that society can no longer afford to ignore (Griffiths, 2025). This blog critically examines both the positive and negative impacts of the digital world on children and young people in Wales, while exploring how the theory of connectivism informs the use of digital communication and the development of digital competence.

Let's start with the good stuff!

Digital media and emerging technologies offer significant opportunities to enhance learning and empower young people to become active participants in their communities (EuroHealthNet, 2018). In Wales, this has been formally recognised through the introduction of the **Digital Competence Framework**, which places digital skills at the heart of the curriculum and acknowledges their importance for young people's future lives and work (Welsh Government, 2021).



(Kids Mental Health, 2025)

Research highlights a range of potential benefits associated with purposeful use of digital technologies, including

- ✓ Improved cognitive function
- ✓ Access to vast information to support research and knowledge
- ✓ Development of social engagement through collaboration and connectivity.
- ✓ Increased emotional wellbeing through social connection
- ✓ Independent learning skills, empowering people to learn away from the traditional classroom
- ✓ Personallised learning where technology adapts the pace and content of learning to suit individual need.

(Haddock et al., 2022)



At first glance, these outcomes appear overwhelmingly positive. However, the extent to which these benefits are realised depends largely on how digital technologies are used and how well children are supported in using them.

From a sociocultural perspective, learning is most meaningful when children are

guided and supported through scaffolding by a more knowledgeable other (Vygotsky, 1978). Without such guidance, children may be at risk of engaging superficially with digital content. Research into the **shallowing hypothesis** suggests that frequent engagement with online content encourages skimming and scrolling behaviours, resulting in weaker long-term associations with knowledge and reduced depth of understanding (Froud et al., 2024).

Digital reading, in particular, is often associated with shallower processing and poorer reading comprehension when compared to print-based reading (Jensen, Roe & Blikstad-Balas, 2024).

The potential drawbacks of digital technology are not limited to knowledge acquisition. This example shows that digitally produced work may appear clear but can obscure learners' thinking processes. When using

The image shows two side-by-side examples of solving the quadratic equation $2x^2 + 5x - 12 = 0$. The left side, labeled 'Digital Pen', shows a clear, step-by-step solution: $2x^2 + 5x - 12 = 0$, factoring to $(2x-3)(x+4) = 0$, then solving $2x-3=0$ to get $x=\frac{3}{2}$ and $x+4=0$ to get $x=-4$. The right side, labeled 'Paper & Pencil', shows a less clear solution: $2x^2 + 5x - 12 = 0$, factoring to $(2x-3)(x+4) = 0$, then solving $x=\frac{3}{2}$ and $x=-4$. Below the equations, a 'Keyboard' label is present. The text 'Show your work and explain how to solve for x, given $2x^2 + 5x = 12$ ' is at the top right.

(Davis et al., 2021)



(Mathnasium, 2020)

has understood a concept or relied on automated supports, such as calculators. This raises important questions about assessment and the role of digital tools in supporting rather than replacing cognitive processes! This is particularly relevant with the rapid increase of AI usage.

The Darker Side of Digital!

Research suggests that the negative effects of the digital world reach far beyond diminished learning, posing risks to their physical, emotional, and social development including:

- ✗ Reduced physical activity
- ✗ Sleep problems including difficulties with falling asleep
- ✗ Behavioural issues including socio-emotional dysregulation
- ✗ Socioemotional Challenges caused by lack of face-to-face interaction
- ✗ Eye strain and other ocular conditions

(Presta et al., 2024)



In addition, the World Health Organization (2024) reports that problematic online gaming and excessive social media use undermine mental and social wellbeing and are associated with an increase in risky behaviours. While several countries have responded by introducing age related restrictions on social media use, Wales remains unable to

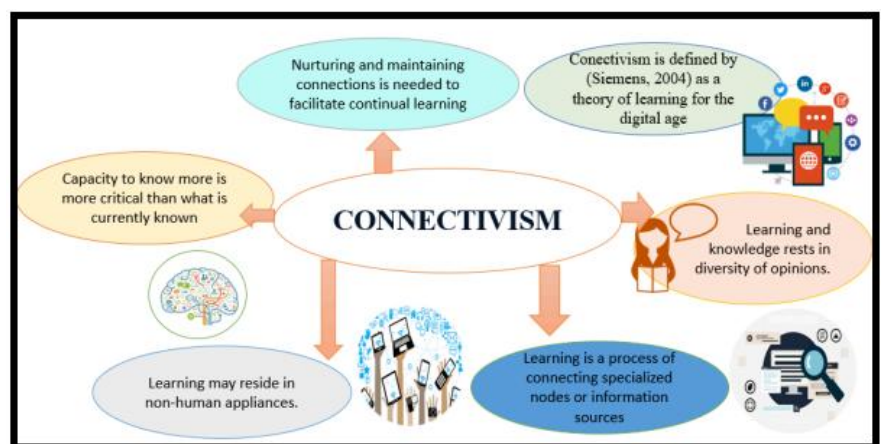
implement similar measures due to internet services being governed by the UK Parliament. Welsh Government must rely on its devolved powers within education to address risks, placing responsibility on schools to protect and educate children about the dangers of inappropriate digital use (Stubbs, 2025).

The tension between digital opportunity and developmental risk highlights the need to critically examine the Curriculum for Wales through the lens of Siemens' (2005) theory of connectivism, particularly in relation to how effectively its ambitions for digitally competent learners are translated into safe, meaningful educational practice. Siemens argues that learning in the modern world increasingly occurs through:

- ✓ **communities of practice**
- ✓ **personal networks**
- ✓ **engagement with authentic, task-based activities.**

This closely aligns with the core purpose of the Curriculum for Wales, which seeks to develop **ambitious, capable learners** who **can learn**

independently and **adapt to an ever-changing landscape of knowledge**, rather than simply retaining static information (Welsh Government, 2023). Furthermore, the curriculum's emphasis on digital communication, collaboration, and the purposeful use of digital tools reflects connectivism principles. These principles are also embedded within the Digital Competence Framework (Welsh Government, 2021), which positions digital technologies as a **central medium through which learning is accessed, constructed, and shared across the curriculum**. Critics however argue that connectivism functions more as a pedagogical framework than a true learning theory, without fully accounting for the cognitive processes underpinning how individuals acquire and internalise knowledge (Plon, 2006). Many see little difference between connectivism and the earlier learning theory of constructivism and while both theories identify learning as an active process, the following comparison clearly shows there are significant differences.



(Elva, Astromelia and Estrada, 2020)

Aspect	Constructivism	Connectivism
Focus	Individual experiences	Networks and connections
Learning Process	Constructing meaning	Connecting to information nodes
Key Influencer	Social interaction	Technology and web networks
Core Skills	Reflection, meaning-making	Synthesizing, recognizing connections
Summary	Focuses on the personal process of constructing meaning based on individual experiences and interactions.	Expands the scope to include the impact of technology and the importance of navigating information networks in the digital age.

(Young, 2024)

Practicing the principles

So, how can we put connectivism into action, helping children learn in line with the Curriculum for Wales while keeping them safe online?

✓ **Encourage students to own their learning journey**

Become a facilitator of autonomous learning. Identify each child's need for scaffolding and support with self-directed learning to ensure understanding.

✓ **Build key skills for effectively exploring and learning through digital networks**

Develop your pupils' digital skills while keeping your own digital competence up to date. Ensure equal access to digital technology for all children regardless of their personal circumstances, utilising school policies for loaning of devices.

✓ **Foster a collaborative, connected learning environment that reaches beyond the classroom**

Offer opportunities for collaboration. Don't limit this interaction to peers, encourage networks with the wider community.

✓ **Empower learners with digital confidence while safeguarding their wellbeing**

Model responsible online behaviour, giving clear guidance on safe and ethical technology use, encourage reflection on online actions, and maintain open communication about risks in line with current school policies (Young, 2024).

The digital world offers incredible opportunities, but also real risks for children and young people. By embedding connectivism through the Curriculum for Wales and the Digital Competence Framework, we can empower learners to navigate, create, and think critically online, whilst keeping their wellbeing at the heart of our teaching. The challenge for us is clear:

It's not enough for children to be competent users of technology, they must also become thoughtful, responsible, and resilient participants in a rapidly changing digital world.

Reference list

- Davis, L.L., Morrison, K., Schnieders, J.Z.-Y. and Marsh, B. (2021). Developing Authentic Digital Math Assessments. *Journal of Applied Testing Technology*, [online] 22(1). Available at: <https://jattjournal.net/index.php/atp/article/view/155879/109378> [Accessed 27 Dec. 2025].
- Elva, M., Astromelia, A. and Estrada, V. (2020). *Connectivism as a Driver to Improve Citizen Learning and engagement in Cognitive Cities: A Literature Review*. [online] Available at: https://papers.iafor.org/wp-content/uploads/papers/iicehawaii2020/IICEHawaii2020_51679.pdf [Accessed 28 Dec. 2025].
- EuroHealthNet (2018). The realities of a digital world and what it means for young people's health. [online] Available at: https://ephconference.eu/repository/conference/2018/Press/Press_release_Children_in_the_digital_world_20181113.pdf [Accessed 27 Dec. 2025].
- Froud, K., Levinson, L., Maddox, C. and Smith, P. (2024). Middle-schoolers' reading and lexical-semantic processing depth in response to digital and print media: An N400 study. *PloS one*, 19(5), pp.e0290807–e0290807. doi:<https://doi.org/10.1371/journal.pone.0290807>.
- Griffiths, J. (2025). *Plenary 17/12/2025 - Welsh Parliament*. [online] Welsh Parliament. Available at: <https://record.senedd.wales/Plenary/15473#C736476> [Accessed 27 Dec. 2025].
- Haddock, A., Ward, N., Yu, R. and O'Dea, N. (2022). Positive effects of digital technology use by adolescents: A scoping review of the literature. *ProQuest*, [online] 19(21), pp.1–17. doi:<https://doi.org/10.3390/ijerph192114009>.
- Kids Mental Health (2025). *How Digital Learning Shapes Your Child's Mental Well-Being: A Parent's Perspective*. [online] Kidsmentalhealth.ca. Available at: <https://www.kidsmentalhealth.ca/wp-content/uploads/2025/04/holistic-digital-learning-balance-810x500.jpeg> [Accessed 27 Dec. 2025].
- Mathnasium (2020). *The Calculator Conundrum--Should Your Child Use One?* Available at: <https://www.mathnasium.com/math-centers/portwashington/news/the-calculator-conundrum-should-your-child-use-one-1405238883> [Accessed 27 Dec. 2025].
- Microsoft (2026). *Dragon's dilemma*. [Digital Image] Available at: <https://copilot.microsoft.com/chats/VmU5wj5UcXuJXQCsKfRee> [Accessed 3 Jan. 2026].

Plon, V. (2006). *Connectivism: a new learning theory? A pedagogical view, not a learning theory*. [online] Available at: <https://jorivas.wordpress.com/wp-content/uploads/2009/11/connectivismnewtheory.pdf> [Accessed 28 Dec. 2025].

Presta, V., Guarnieri, A., Laurenti, F., Mazzei, S., Arcari, M.L., Prisco Mirandola, Vitale, M., Yong, M., Condello, G. and Gobbi, G. (2024). The Impact of Digital Devices on Children's Health: A Systematic Literature Review. *Journal of Functional Morphology and Kinesiology*, [online] 9(4), pp.236–236. doi:<https://doi.org/10.3390/jfmk9040236>.

Ragnhild Engdal Jensen, Roe, A. and Marte Blikstad-Balas (2024). The smell of paper or the shine of a screen? Students' reading comprehension, text processing, and attitudes when reading on paper and screen. *Computers and education/Computers & education*. doi:<https://doi.org/10.1016/j.compedu.2024.105107>.

Siemens, G. (2005). *Connectivism: A learning theory for the digital age*. [online] www.itdl.org. Available at: https://www.itdl.org/Journal/Jan_05/article01.htm [Accessed 28 Dec. 2025].

Stubbs, M. (2025). '*Children spending more time in digital worlds than the real one*'. [online] Nation.Cymru. Available at: <https://nation.cymru/news/children-spending-more-time-in-digital-worlds-than-the-real-one/> [Accessed 27 Dec. 2025].

The School Health Research Network (2023). *PriSHRN National Report 2022-3*. [online] School Health Research Network. Available at: <https://www.shrn.org.uk/prishrn-national-report-2022-3/>.

Vygotsky, L. (1978). *Mind in society: the Development of Higher Psychological Processes*. Harvard University Press.

Welsh Government (2021). *Digital Competence Framework (DCF) - Hwb*. [online] Gov.wales. Available at: <https://hwb.gov.wales/curriculum-for-wales/cross-curricular-skills-frameworks/digital-competence-framework-dcf> [Accessed 23 Dec. 2025].

Welsh Government (2023). *Curriculum for Wales: overview*. [online] GOV.WALES. Available at: <https://www.gov.wales/curriculum-wales-overview#:~:text=ambitious%2C%20capable%20learners%2C%20ready%20to>.

World Health Organization (2024). *Teens, screens and mental health*. [online] World Health Organization. Available at: <https://www.who.int/europe/news/item/25-09-2024-teens--screens-and-mental-health> [Accessed 27 Dec. 2025].

Young, N. (2024). *Connectivism Learning Theory: The Ultimate Guide for 2024*. [online] Teachfloor.com. Available at: <https://www.teachfloor.com/blog/connectivism-learning-theory> [Accessed 28 Dec. 2025].



(Microsoft, 2026)

Facing the Digital Dragon Together:

Family Learning in a Digital Wales.

With digital competence identified as one of the three cross-curricular responsibilities within the Curriculum for Wales (Welsh Government, 2023), digital teaching and learning have become firmly embedded within educational practice across Wales. The recent introduction of the Digital Inclusion Grant (Welsh Government, 2025) and the continued promotion of Life Long Learning and Essential Skills

Wales qualifications, signals a clear policy commitment not only to preparing children for a digital world but also to ensuring that adults possess the essential digital skills required for life, learning and work (Qualifications Wales, 2024).

Enabling parents and carers to engage in digital learning alongside their children has become a priority within family learning provision. However, for many families, digital learning can expose issues around inclusion resulting in frustration rather than empowerment, placing additional demands on educators to provide both technical guidance and emotional reassurance. This blog critically reflects on the benefits of digital teaching and learning from a family learning perspective, alongside an examination of the persistent barriers to digital inclusion in Wales.

Let’s first take a look at the benefits of digital learning

For the learner Access to knowledge ability to engage with a wide range of resources and information Supports accessibility and inclusion particularly important for learners with additional learning needs.  (stockcake, n.d.)	For Staff Enhances lesson planning and delivery through access to digital resources Enables real-time assessment and feedback, quickly identify gaps in knowledge and understanding  (GeTech, 2022)
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Offers personalised, self-paced learning suited to different learning styles. Increases engagement and motivation through interactive digital resources. Develops digital responsibility and independence allowing learners to stay safe in a digital world Helps learners track progress allows reflection on their learning journey. Build digital skills for lifelong learning preparing learners for real world situations and future employment.	Supports inclusive practice, assistive technologies meet the needs of learners with disabilities or additional learning needs. Improves communication and collaboration, supports interaction with students, parents and other educators. Provides access to up-to-date content and global expertise, supporting professional development. Encourages innovative pedagogy, including, gamification, collaborative learning and personalised instruction. Supports continuity of learning during disruption, as demonstrated during the COVID-19 pandemic.
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The benefits of digital learning specifically in family sessions can be understood through Vygotsky's (1978) concept of learning as a socially mediated process highlighting the importance of scaffolding within the Zone of Proximal Development. In family learning sessions, digital tools allow parents to learn alongside their children, supported by tutors before gradually developing independence and confidence to continue to support their children and to further develop their skills. Bandura's (1977) social learning theory further emphasises the role of modelling. Family digital learning enables parents to observe others successfully engaging with technology, which can be particularly empowering for adults with low digital confidence.

Time for Change!

Family learning sessions have evolved significantly in recent years. While family learning has historically focused on building positive relationships within families and schools, significant developments have reshaped practice, altering how family learning is delivered, and enhancing its potential benefits.

Let's explore these developments in more detail...

Purposeful programme design



Estyn (2012) identified a risk within family learning provision whereby learners may move between short, courses without progressing into longer or more structured programmes that support the sustained development of essential skills. In response to this, delivery models have increasingly shifted towards an approach combining initial one-off introductory engagement sessions with longer, curriculum-based courses. This model aims to ensure that family learning promotes meaningful long-term development of digital skills supporting educational, personal and employment outcomes.

Accelerated digital delivery

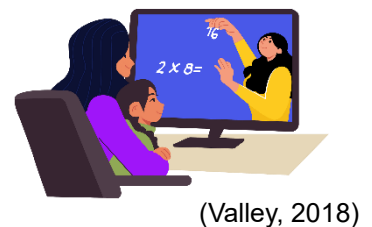
In 2020 the Covid-19 pandemic resulted in provision moving online.

For many families, particularly those living in poverty, this transition exposed existing inequalities, with access to learning dependent on

devices, connectivity and digital confidence. Family learning services responded by

loaning devices and Wi-Fi dongles, while facilitators quickly adopted additional roles as technical support, **which often involved reminding tutors and learners that they were on mute!**

Although training was rapidly developed for tutors, many learners were left navigating unfamiliar digital platforms, highlighting significant digital skills gaps among adults in Wales and demonstrating how digital learning can risk reinforcing exclusion when adequate support is not in place.



Clear, national vision



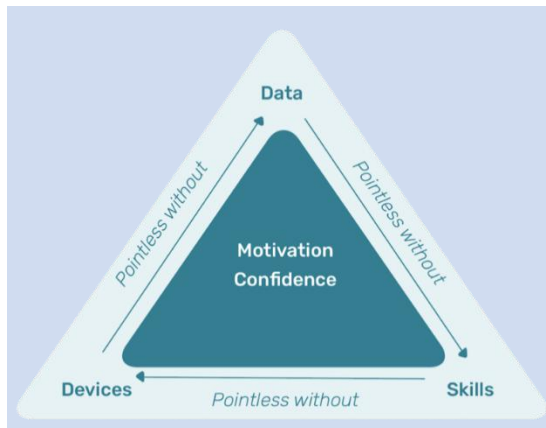
(bbc, 2022)

The introduction of the Curriculum for Wales (Welsh Government, 2023), and the Digital Competence Framework (Welsh Government, 2021), has positioned digital competence at the centre of school pedagogy, with digital skills embedded across all areas of learning.

Together, they articulate a vision for a holistic, skills-focused and inclusive education system in Wales. Importantly, this vision extends beyond the school environment, offering an educational philosophy that can be applied from early childhood through to adult and family learning contexts, thereby supporting continuity and progression for parents and carers as learners in their own right.

Taken together, these developments have repositioned family learning as a more effective and relevant space for the development of digital competence. However, families still face significant barriers to digital inclusion in Wales.

With poverty representing the most significant challenge for children and families in Wales (Thomas and Thomas, 2023), compounded by the recent cost-of-living crisis, affordability emerges as a major barrier to digital inclusion. This is further exacerbated by low digital confidence and



skills, often accompanied by inadequate digital infrastructure, and we all know that reliable Wi-Fi in rural Wales is like a dragon sighting: **exciting, magical**, and mostly **mythical!**

This *Pointless Triangle* demonstrates that without all of the required elements, digital inclusion is not possible (Network Readiness Index, 2024).

Digital inclusion has been on the Welsh Government's agenda for over fifteen years, starting with the ***Digital Inclusion Framework for Wales*** (Welsh Government, 2016), which flagged those most at risk of exclusion. Progress, however, has been uneven, with persistent gaps in access, skills and infrastructure. ***The Digital Strategy for Wales*** (2021b) introduced the ***Minimum Digital Living Standard***, acknowledging that devices alone aren't enough, reliable connectivity and ongoing support are crucial. ***The Digital Inclusion Grant*** (2025) now provides substantial funding to embed inclusion, promote cross-sector collaboration and address local barriers. However, turning policy ambition into real, measurable change remains a major challenge. Research shows that although only 7% of adults in Wales are digitally excluded, that figure rises to 14% of those living in social housing and 12% of those with long term health conditions. Showing that digital inclusion continues to disproportionately affecting the most vulnerable (Audit Wales, 2023).

To truly overcome digital exclusion, Welsh Government must prioritise family learning provisions for receipt of digital inclusion funding, ensuring families can develop the digital skills needed to succeed in this digital world. Without sustained investment, policy ambition will remain a promise rather than a reality, and the most vulnerable families will continue to face a digital divide.

Reference list

- Audit Wales (2023). *Digital inclusion in Wales Report of the Auditor General for Wales*. [online] Available at: <https://www.audit.wales/sites/default/files/publications/digital-inclusion-eng.pdf> [Accessed 31 Dec. 2025].
- Bandura, A. (1977). *Social Learning Theory*. Englewood Cliffs: Prentice-Hall.
- bbc (2022). GCSEs: New Welsh qualifications promised for schools. *BBC News*. [online] 16 Feb. Available at: <https://www.bbc.co.uk/news/uk-wales-60389024> [Accessed 31 Dec. 2025].
- Estyn (n.d.). *Estyn logo*. Available at: <https://estyn.gov.wales/> [Accessed 2 Jan. 2026].
- Estyn (2012). *The impact of family learning programmes on raising the literacy and numeracy levels of children and adults*. [online] Available at: <https://www.estyn.gov.wales/system/files/2020-07/The%2520impact%2520of%2520family%2520learning%2520programmes%2520on%2520raising%2520the%2520literacy%2520and%2520numeracy%2520levels%2520of%2520children%2520and%2520adults%2520-%2520May%25202012.pdf> [Accessed 30 Dec. 2025].
- GeTech (2022). *5 reasons why Chromebooks for teachers make sense*. [online] Getech. Available at: <https://www.getech.co.uk/5-reasons-why-chromebooks-for-teachers-make-sense/>.
- Microsoft (2026). *Family of dragons on laptop*. [Digital Image] Available at: <https://copilot.microsoft.com/chats/vFkGkMYaL4W8hFEi5QZkr> [Accessed 3 Jan. 2026].
- Network Readiness Index (2024). *Supporting digital inclusion in the UK – Network Readiness Index*. [online] networkreadinessindex.org. Available at: <https://networkreadinessindex.org/supporting-digital-inclusion-in-the-uk/> [Accessed 30 Dec. 2025].
- Qualifications Wales (2024). *Essential Skills Wales | Qualifications Wales*. [online] Qualifications.wales. Available at: <https://qualifications.wales/information-support/qualifications-available-in-wales/essential-skills-wales/> [Accessed 29 Dec. 2025].
- stockcake (n.d.). *Kids exploring technology*.

Thomas, G. and Thomas, S. (2023). '*The biggest issue affecting children in Wales*' – tackling child poverty. [online] research.senedd.wales. Available at: <https://research.senedd.wales/research-articles/the-biggest-issue-affecting-children-in-wales-tackling-child-poverty/>.

Valley, S. (2018). *Online learning - Free vector clipart images on creazilla.com*. [online] Creazilla. Available at: <https://creazilla.com/media/clipart/3229475/online-learning> [Accessed 31 Dec. 2025].

Vygotsky, L. (1978). *Mind in society: the Development of Higher Psychological Processes*. Harvard University Press.

Welsh Government (2016). *A Strategic Framework for Wales*. [online] Available at: https://www.gov.wales/sites/default/files/publications/2019-05/digital-inclusion-framework_0.pdf [Accessed 30 Dec. 2025].

Welsh Government (2021a). *Digital Competence Framework (DCF) - Hwb*. [online] Gov.wales. Available at: <https://hwb.gov.wales/curriculum-for-wales/cross-curricular-skills-frameworks/digital-competence-framework-dcf> [Accessed 23 Dec. 2025].

Welsh Government (2021b). *Digital strategy for Wales [HTML]*. [online] GOV.WALES. Available at: <https://www.gov.wales/digital-strategy-wales-html> [Accessed 31 Dec. 2025].

Welsh Government (2023). *Curriculum for Wales: overview*. [online] GOV.WALES. Available at: <https://www.gov.wales/curriculum-wales-overview#:~:text=ambitious%2C%20capable%20learners%2C%20ready%20to>.

Welsh Government (2025). *Apply for the Digital Inclusion Wales Grant | GOV.WALES*. [online] GOV.WALES. Available at: <https://www.gov.wales/apply-digital-inclusion-wales-grant> [Accessed 29 Dec. 2025].



(Microsoft, 2026)

Breathing Fire into Family Learning:

LEGO Robotics as a family learning resource.

Digital skills, are increasingly essential for the future success of children and young people in Wales. The World Economic Forum (2016) suggests that 65% of today's students will work in jobs that do not yet exist, while the UK is projected to require 1.9 million science technology engineering and maths (STEM) professionals by 2035 (Department for Education, 2023). These projections highlight the importance of introducing digital and STEM skills at an early age.

Although coding was added to the classroom in 2016 with the introduction of the Digital Competency Framework (Welsh Government, 2021), evidence suggests that two-thirds of teachers felt under-prepared to support children's coding development, indicating a gap between policy and practice. This reinforces the need for **effective and accessible learning resources**.

LEGO robotics provides opportunities to develop coding and computational thinking while also promoting collaboration and problem-solving. When used in family learning contexts, it can also support inclusive engagement. This blog critically reflects on LEGO robotics as an educational resource for family learning, drawing on learning theory and Welsh Government policy.

**What actually is
LEGO robotics?**



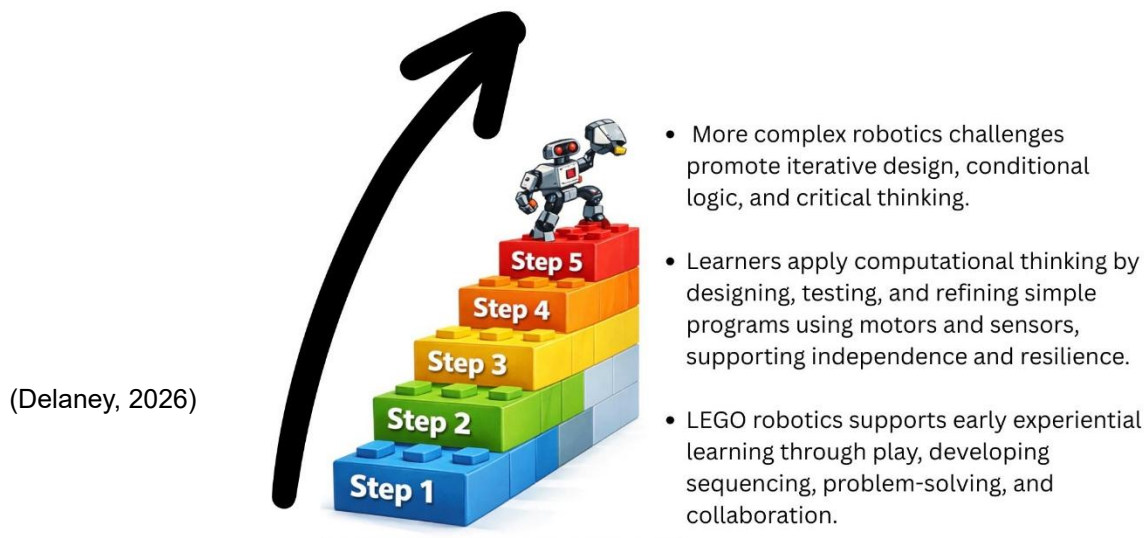
LEGO has evolved significantly since its creation in 1932. What began as a simple construction brick now offers opportunities to integrate physical construction with coding. "Students combine highly accurate motors and sensors with colourful LEGO elements and an intuitive coding platform to design and build robots and other interactive models" (LEGO, 2025).



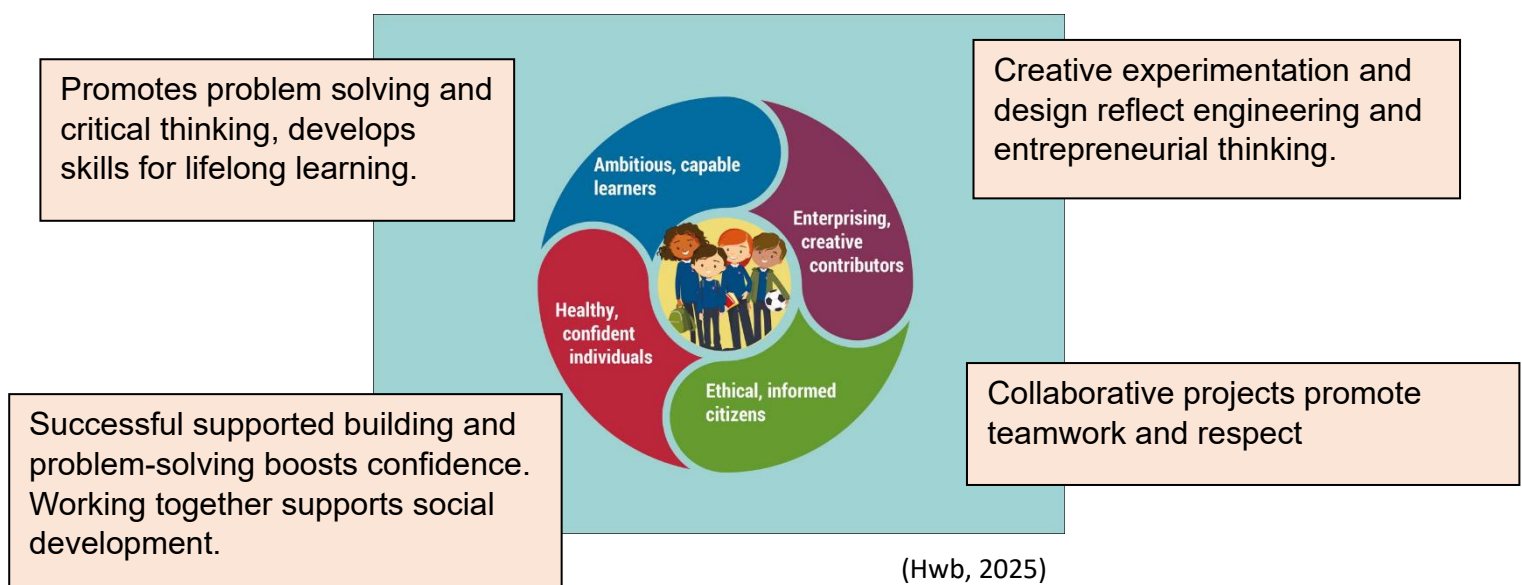
Click here to see what LEGO robotics is all about

<https://education.lego.com/en-gb/>

Look at some of the ways the wide range of LEGO products—from DUPLO-based sets to more advanced SPIKE systems, supports the development of digital competence, helping children move through the progression steps of the Curriculum for Wales.



LEGO robotics also fulfils the requirements of the four core purposes...



Building family relationships brick by brick

LEGO robotics is an ideal resource for family learning sessions, typically aimed at children aged 7–11 and their families. Its colourful, familiar bricks engage hard-to-reach families often where the parents have low level essential skills. Using a product most adults recognise and feel comfortable with enables practitioners to work with parents who might otherwise be reluctant to engage with digital learning due to fear of the unfamiliar.



(Dreamstime, n.d.)

Knowles (1973) found that effective adult learning programmes should seek to connect new information to learners' existing knowledge base.

In family learning sessions, LEGO robotics provides a rich context for learning, combining social interaction, hands-on experience, and creative construction. Learners operate within their zone of proximal development, with guidance from more knowledgeable others either a tutor, a parent supporting a child, or, as is now common in digital education, children supporting their parents (Vygotsky, 1978). This collaborative approach reduces traditional power imbalances, allowing all participants to contribute, learn, and gain confidence. The hands-on nature of LEGO robotics supports Dewey's experiential learning principles (1938), enabling learners to develop skills through active engagement, trial and error, and immediate feedback via the software.

Sometimes the robot not working first time can be the best lesson of all!

Simultaneously, it embodies Papert's constructionist theory (1980), as learners create tangible, meaningful items, through which abstract computational and problem-solving concepts become concrete. The cycle of designing, testing, reflecting, and redesigning illustrates how social, experiential, and constructionist approaches can work together to support effective family learning.

An activity for all...

LEGO robotics has so many benefits as an Inclusive form of family engagement

An accessible entry points to digital learning -

The Scratch style coding software is user friendly with images and step by step instructions.



(WIRED, 2009)

Engagement that avoids over reliance on text -

suitable for bilingual learners, those who do not have English as their first language, or anyone with low level literacy skills.

Improvement in social competence for children with autism – Studies show participation in LEGO-based activities led to notable improvements in social interaction skills, including increased frequency and duration of social engagement with peers (LeGoff, 2004).

Building Skills that Break Budgets



The activity may be inclusive but the cost of LEGO robotics is definitely not. Even second-hand kits sell on eBay for hundreds of pounds. With school budgets already stretched and a cost-of-living crisis affecting families in Wales even if schools prioritise LEGO robotics as a resource for its pupils, parents are left with a difficult dilemma when it comes to supporting further learning at home. A lack of backward compatibility and ever changing designs puts pressure on anyone who does purchase to continue to buy additional items as they develop their skills and progress their learning (The Knowledge Hub, 2025). A review on the use of LEGO Robotics in Education (Souza et al., 2018) also found that there was a lack of standardised methodologies in teaching practices and evaluation methods, making it difficult to compare results or draw strong general conclusions about effectiveness across settings.

LEGO robotics offers a powerful and engaging approach to family learning, supporting the development of digital competence, collaboration, and problem-solving in line with the Curriculum for Wales. Grounded in established learning theories, it enables inclusive, hands-on experiences that strengthen family relationships while making abstract concepts tangible. However, significant challenges remain. High costs limit equitable access for schools and families, and the lack of standardised pedagogical and evaluative frameworks weakens the evidence base for impact.

To realise its full potential in Wales, educators, policymakers, and practitioners must



Invest strategically

**Develop shared
approaches**

**Prioritise rigorous
evaluation**

When implemented thoughtfully, LEGO robotics can ignite a love of learning and build digital confidence for both children and adults alike.

Reference list

Delaney (2026). *Progression steps*. [Digital Image] Available at:

[https://www.canva.com/design/DAG8LHdjN9s/M-](https://www.canva.com/design/DAG8LHdjN9s/M-Cti8bMhgi53U9TqPtKBA/edit?utm_content=DAG8LHdjN9s&utm_campaign=designshare&utm_medium=link2&utm_source=sharebutton)

[Cti8bMhgi53U9TqPtKBA/edit?utm_content=DAG8LHdjN9s&utm_campaign=designshare&utm_medium=link2&utm_source=sharebutton](https://www.canva.com/design/DAG8LHdjN9s/M-Cti8bMhgi53U9TqPtKBA/edit?utm_content=DAG8LHdjN9s&utm_campaign=designshare&utm_medium=link2&utm_source=sharebutton).

Department for Education (2023). *Labour market and skills projections: 2020 to 2035*. [online] GOV.UK.

Available at: <https://www.gov.uk/government/publications/labour-market-and-skills-projections-2020-to-2035> [Accessed 2 Jan. 2026].

Dewey, J. (1938). *Experience and Education*. [online] New York: Touchstone. Available at:

<https://www.schoolofeducators.com/wp-content/uploads/2011/12/EXPERIENCE-EDUCATION-JOHN-DEWEY.pdf> [Accessed 2 Jan. 2026].

Dreamstime (n.d.). *Big baby. . Young man in pajamas playing toys while sitting isolated on white*. Available

at: <https://www.dreamstime.com/stock-images-big-baby-young-man-pajamas-playing-toys-sitting-isolated-white-image33239144> [Accessed 3 Jan. 2026].

Hwb (2025). *View - Hwb*. [online] Gov.wales. Available at: [https://hwb.gov.wales/playlists/view/b45f4305-](https://hwb.gov.wales/playlists/view/b45f4305-945e-40cd-b2fe-0c467346109f/en/26)

[945e-40cd-b2fe-0c467346109f/en/26](https://hwb.gov.wales/playlists/view/b45f4305-945e-40cd-b2fe-0c467346109f/en/26) [Accessed 2 Jan. 2026].

LEGO (2025). *Robots for Kids*. [online] Lego.com. Available at: [https://www.lego.com/en-](https://www.lego.com/en-gb/categories/robots-for-kids)

[gb/categories/robots-for-kids](https://www.lego.com/en-gb/categories/robots-for-kids) [Accessed 2 Jan. 2026].

LeGoff, D.B. (2004). Use of LEGO as a Therapeutic Medium for Improving Social Competence. *Journal of*

Autism and Developmental Disorders, [online] 34(5), pp.557–571. doi:<https://doi.org/10.1007/s10803-004-2550-0>.

Malcolm Shepherd Knowles (1973). *The adult learner : a neglected species*. 4th ed. Houston, Tex.: Gulf.

Microsoft (2026). *mother and child building welsh dragon with lego robotics*. [Digital Image] Available at:

<https://copilot.microsoft.com/chats/ja5WivZtv2A7nnGuimUqx> [Accessed 3 Jan. 2026].

Papert, S. (1980). *Mindstorms: Children, computers, and powerful ideas*. New York: Basic Books.

Pluck, A. (2017). *Where's the confidence in coding?* [online] Education Business. Available at: https://educationbusinessuk.net/features/where%E2%80%99s-confidence-coding?utm_source=chatgpt.com [Accessed 2 Jan. 2026].

Souza, I.M.L., Andrade, W.L., Sampaio, L.M.R. and Araujo, A.L.S.O. (2018). *A Systematic Review on the use of LEGO® Robotics in Education*. [online] IEEE Xplore. doi:<https://doi.org/10.1109/FIE.2018.8658751>.

The Knowledge Hub (2025). *LEGO Education Support | Common FAQs | Knowledge Hub*. [online] The Knowledge Hub. Available at: <https://knowledge-hub.com/lego-education-support/> [Accessed 3 Jan. 2026].

Vygotsky, L. (1978). *Mind in society: the Development of Higher Psychological Processes*. Harvard University Press.

Welsh Government (2021). *Digital Competence Framework (DCF) - Hwb*. [online] Gov.wales. Available at: <https://hwb.gov.wales/curriculum-for-wales/cross-curricular-skills-frameworks/digital-competence-framework-dcf> [Accessed 23 Dec. 2025].

WIRED (2009). *LEGO Education WeDo*. [online] WIRED. Available at: <https://www.wired.com/2009/11/lego-education-wedo/> [Accessed 3 Jan. 2026].

World Economic Forum (2016). *The future of jobs employment, skills and workforce strategy for the fourth industrial revolution executive summary*. [online] Available at: https://www3.weforum.org/docs/WEF_FOJ_Executive_Summary_Jobs.pdf [Accessed 2 Jan. 2026].