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DIGITAL COMPETENCE: THE TECH WIZARDS OF WALES

WHAT IS TECHNOLOGY AND DIGITAL COMPETENCE?

Technology is machinery or equipment created via scientific knowledge (Britannica, 2025). (or in simpler terms the modern everyday tools we use, such as computers, smartphones, software and networks). Digital competence is a mix of knowledge, skills and attitudes with regards to the use of technology. A tech savvy person will be able to to interact digitally, produce work digitally and be confident in handling data and problem solving, and kids these days are essentially growing up with tech in their hands – phones, laptops, tablets – it's just part of ordinary life for them, like TV's or books were for previous generations. They tend to pick things up quickly because technology isn't new or intimidating; it's just normal (Kennington, 2022), and the Digital Competency Framework for Wales (DCF) is absolutely here for it!

DCF For the little ones (Aged 3–7): Being safe online and managing personal information, using simple communication tools, making simple digital creations, beginning to understand basic info and data, and how to find things, and developing computational thinking (HwbCymru).

DCF For the bigger kids (Aged 8–16): Finding, evaluating and managing information, interacting, sharing and maintaining online identity, creating and editing content like videos, graphics and being aware of copyright, protecting devices/data and understanding the impact of staying safe online, well-being and recognising potential risks, and using digital tools to solve problems (HwbCymru).

The DCF is a core part of the new curriculum for Wales as digital competence is considered equally as important as literacy and numeracy skills, together forming the big three. The framework identifies 4 strands of key components; citizenship, interacting and collaborating, producing, and data and computational thinking. The aim is to apply digital skills to all areas of learning for children aged 3 to 16, to help teach kids how to think smart, stay safe online and prepare them for the very digital world of work (Twinkl).

CITIZENSHIP AS PART OF THE DCF

Citizenship is made up of 4 elements; identity, image and reputation, health and well-being, digital rights, licensing and ownership and online behaviour and online bullying. When we talk about identity, image, and reputation, it's really about helping children gradually build the skills they need to stay safe and confident online. In progression step 1, this starts with the basics – learning how to tell the difference between someone they know and someone they've never met, exploring images of themselves and others on school websites with adult support, and understanding that what they do online has consequences. At this stage, it's all about recognising rules and why they matter for staying safe.

As children move into progression step 2, their understanding deepens. They begin to learn the difference between private and personal information and when it's appropriate to share it. They also start to understand that anything shared online leaves a digital footprint, and they're introduced to rules around sharing images and data. This is also where they begin learning practical ways to protect themselves, such as using secure passwords and keeping personal information safe.

By progression step 3, children are encouraged to think more critically about their online actions. They learn how to protect themselves from online identity theft, explore the benefits and risks of location sharing on mobile devices, and consider the impact of sharing images, videos, and even the metadata attached to them. They also look at the pros and cons of giving personal information or device access to different apps and software.

In progression step 4, the focus shifts to understanding the long-term impact of online activity. Children learn that their digital footprint can be searched, copied, and shared, often beyond their control. They're encouraged to discuss the benefits and risks of presenting themselves in different ways online, while continuing to build strategies to protect themselves from identity theft and online scams.

Finally, in progression step 5, children are supported in thinking about their online reputation in a real-world context, including future employment. This includes using social media responsibly, understanding ethical issues such as corporate encryption, exploring how different organisations around the world protect data, and recognising both the risks and benefits of the data and services used on personal devices (DCF Hwb, 2020).

School's digital competence policies align with the national DCF for Wales, they use self-evaluation, gathering the right evidence and turning it into plans for improvement, teachers are there to keep everyone motivated and on track. Digital learning is tailored, relevant and shaped around the needs of individuals and groups. Schools ensure that everyone – staff, pupils and the wider school community know about the importance of good digital skills. Finally, with strong curriculum mapping, digital skills are interlinked throughout learning, giving pupils plenty of chance to practise and apply (Estyn, 2019).

The digital skills pupils learn in school aren't just "nice to have" – they're essential for life beyond the classroom. From future career prospects, to everyday tasks, these skills help prepare **young people** for the fast-moving digital world. Digital competence gets them ready for work and the future; job hunting is digital. From searching online, digital application forms, and emailing, students need these skills before they even set foot in a workplace. In the world of work, digital literacy boosts productivity, helping people collaborate, manage data and use specialist software confidently. As technology continues to evolve, a **strong foundation of skills** gives pupils the confidence they need to adapt accordingly (ICDL, 2024). Digital skills for everyday life; pupils learn how to find information quickly, spot what's reliable, and communicate effectively and responsibly across digital platforms. They also learn how to stay safe online – understanding privacy, recognising risks and knowing when and how to ask for help. Digital problem solving also helps with everyday tasks, from managing money to accessing essential services (Sharman, 2023). Linking learning to the real world; by embedding digital tools into everyday learning, schools help bridge the gap between traditional education and the realities of a tech driven world. Pupils gain skills employers are looking for, not just knowledge for tests. Hands-on experiences – like project based learning and emerging technologies build confidence and give pupils an insight into how digital skills are used in real life (explorance, 2025).

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The Digital World

Good or Bad for the new generations?

Technology has moved crazy fast, and at this point it's pretty much impossible to avoid - therefore children are now growing up in a highly digital environment, and the question arises, is this beneficial or simply harmful for them? Well there are many positive and negative effects that the digital world may have on children and young people, so let's take a look:

Some positive effects include; enhanced educational opportunities, improved communication and collaboration, digital literacy and critical thinking, career advancement and entrepreneurship, creativity and digital expression, empowerment and global citizenship, entertainment, portable/versatile working (Leshoo, 2023).

Some negative effects include; lower attention span, increased risk and lack of privacy, risk of mental health issues, obesity, falling grades, online bullying or hate, social interaction issues, inequality of access, and plagiarism/copyright (WGU, 2019).

There are many ways in which children can be kept safe online, including a number of policies and organisations; such as, The Digital Competency Framework (DCF), Wales Safeguarding Procedures, School Online Policies, Safeguarding Policy and, The Online Safety Act (2025). Policies act like a guide for using technology safely by:

- Setting some ground rules for what's acceptable online.
- Helping to spot risks like cyberbullying, grooming or inappropriate content.
- Explaining what to do/who to tell if something goes wrong.
- Ensuring that safeguarding applies online as well as in person.
- Encouraging respectful and responsible behaviour (DFE, 2025).

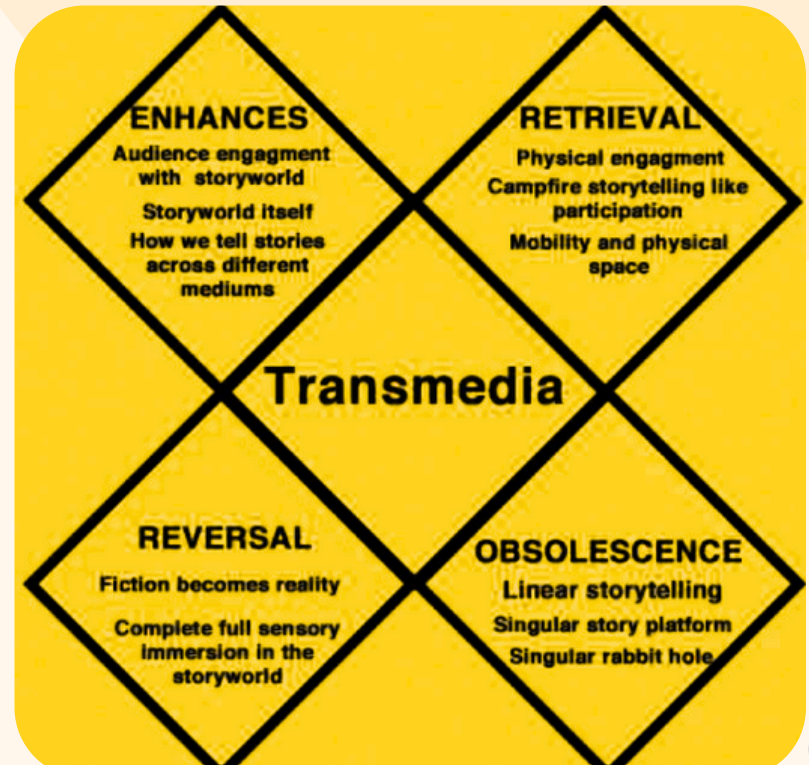
Organisations back this up by:

- Providing advice, resources and training for learners, parents and staff.
- Monitoring online spaces.
- Offering helplines and reporting tools.
- Working with schools and tech companies to make the digital world safer overall (NSPCC, 2025).

Together, these policies and organisations create a safety net. They don't just react when something goes wrong - they help prevent issues in the first place, giving learners the confidence and skills they need to explore the digital world safely and responsibly.

According to research by Ofcom; around 24% of children aged 5-7 years old now own a smartphone, while 76% use a tablet. Around 42% of these parents say they use social media sites and apps with their child, 32% reported that their child uses social media independently, and it seems as though these figures just keep growing, suggesting that a vast majority of young children grow up very familiar with the use of technology (OfCom, 2024). Too much screen time during the early years can be harmful as face-to-face interactions are how they pick up on things like eye contact, body language, facial expressions and subtle social cues. That said, screens can be useful when in-person time isn't always possible, for example video calls, where it is still possible to see the people they are interacting with, especially as a way of maintaining connections with friends or family who live far away (Adair, 2025).

Herbert Marshall McLuhan (1911-1980) was a Canadian philosopher of Communication Theory. McLuhan is known for his expression 'media is the message' which means the form of media (TV, internet) can be more influential than the content we consume (Euchner, 2016). The 'global village' predicting that electronic media would connect people across the world instantly almost 30 years before it was it was invented! With this, he created The Tetrad of media; what does the medium enhance? What does the medium make obsolete? What does the medium retrieve that had been obsolesced earlier? What does the medium flip into when pushed to extremes? (Sack, 2019)



(Zuckerman, 2013).

George Siemens and Steven Downes Theory of Connectivism (2005) is said to be "A learning theory for the digital age" as learning is derived from forming connections. The theory has many benefits, it facilitates networked learning, promotes lifelong learning, emphasises learner autonomy and personalisation, enhances collaboration, improves learning in the digital age, and helps cope with information abundance (Pappas, 2025). The core concepts of the theory are based off; learning gets way more interesting when lots of different opinions are in the mix. Variety isn't just nice - it's essential.

Learning isn't about memorising facts and information, it's about making connections between different ideas and information sources. Not all knowledge exists only in our heads, some of it lives in apps, tools, search engines, and tech we use daily. The ability and capacity to learn more is far more important than what you already know. Learning doesn't happen without a little nurture and work, meaning that building and maintaining connections with people, ideas and networks. The ability to spot patterns and connections across fields, concepts and ideas is a vital skill to have in today's world, some might even say superpower. Learning should keep up with the times, relying on accurate, up to date sources. Decision making is part of the learning process. Choosing what to learn and how to learn and how to interpret information happens within a constantly changing reality (Siemens, 2005).

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A TA's Guide to Digital Teaching and Learning



- I am a primary school teaching assistant, who has worked primarily in the foundation phase (KS1) for a number of years. My role includes;
- Learning support - working one-to-one or in groups to go over lessons, build confidence in literacy and numeracy, and give extra support to those who need it most.
 - Classroom support - helping the teacher keep the day running smoothly by managing behaviour, setting up activities, tidying up and supervising pupils.
 - Resource prep - getting involved in planning and creating learning materials, as well as setting up displays to make the classroom a welcoming, engaging space.
 - Pupil wellbeing - being there for children who are upset, unwell, or have had a minor injury, and helping maintain a safe and caring environment.
 - Admin help - supporting with record keeping, marking, photocopying, and organising resources to take pressure off the teacher.
 - Extra-curricular support - helping on school trips, sports days, and at after school clubs, supporting pupils beyond the classroom (skillsforschools).

Although this is just a typical overview of the many things that I do on a daily basis, these roles can also be applied digitally in a number of ways, such as;

- Getting hands on with tech - help children to use tablets, computers, interactive whiteboards, and fun educational apps.
- Building digital skills - encouraging independence, showing them the basics of searching, typing, and navigating digital tools, and ensuring they know how to stay safe online.
- Inclusive learning - I support pupils with different abilities or learning needs so that everyone can access digital content and enjoy learning.
- Tech prep - from setting up devices to preparing digital materials and organising files.

Fostering digital literacy - guiding pupils on safe and responsible online behaviour, privacy, and understanding their digital footprint (instructional connections, 2021).

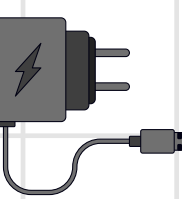
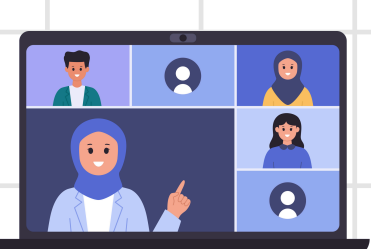
The list just keeps getting bigger, because the world is becoming more digital, and it is now school and educational setting staff's duty to ensure that they have the skills that they need to be digitally competent. So, what are the real benefits of digital learning? What impact is it having on learners and staff? What are the barriers we are facing and how can we overcome them?

Some benefits of digital teaching and learning include personalised learning, in terms of pace, content and delivery, digital learning can be tailored to meet the needs of each individual. Gamification, using video games, apps, or online platforms to teach, rather than traditional lessons, providing a more fun feel. Self-directed learning, referring to a student's ability to manage their own time, do their own research and take ownership of their learning. Easier to access, online learning provides students, who might otherwise struggle to access education, with a way to learn. Digital assessment tracks progress, students can clearly see their progress and are able to revisit feedback whenever they need to. Blended learning, combining face-to-face tutoring with online learning - providing the best of both worlds; the convenience and flexibility of online, with the personal touch of in-class lessons. Competency-based learning, within a period of study, learners will progress at different rates, which is more manageable via digital education. Collaborative learning, students can share their work with each other, or with the teacher, work on group projects, video conferencing and chat forums, also building teamworking and social skills. Finally, digital learning and teaching of course improves digital literacy, an essential life skill - even the act of applying for a job is likely to include technology (Montes, 2022).

On the flipside there are a number of barriers to digital inclusion (Mikova), such as cost, devices are expensive, and for many low-income families, affording modern technology may come as more of a luxury. Lack of skills and confidence, lots of people feel unsure navigating the digital world, especially due to scams and online safety. Infrastructure, in rural areas poor broadband or unreliable electricity makes staying connected a real challenge. Accessibility is overlooked, too many websites and apps still aren't designed with everyone in mind. For those with visual, hearing or motor impairments, or rely on assistive technologies the online world can feel off-limits. Age and demographics matter, older adults, people with lower education levels, and some minority ethnic groups are more likely to be left out. Attitudes and culture, some people simply don't trust technology, fear online threats, or don't see how being online is relevant in their lives. In certain communities there may even be a stigma around digital tools. Language is a quiet but powerful barrier, if content is overly complex or not in someone's first language, it's easy to get lost. Finally, a lack of support, learning something new is much easier when you have someone to ask for help (Tutin, 2020).

So, how can these various barriers be overcome? Starting with affordability, fortunately schools are in a position where they receive funding for electronic equipment, so that every child has the same opportunity, outside of school, there are public libraries where families can freely access the internet, or in some cases grants are offered to those who may not be able to afford computers or tablets. Secondly, accessibility; companies and manufacturers should work to ensure that their systems or devices are accessible from the start, so that users of all backgrounds are included. Using clear language and layouts is also important, keeping things simple to understand, such as, plain language, clear buttons, and straightforward navigation. Testing with people of different ages, backgrounds and abilities is essential to promoting inclusion, they'll spot issues and provide advice on how to make it more suitable, in a school, staff should routinely carry out checks on any apps/tools they wish to use to ensure suitability. Giving people options is another important one, and this can be done within a setting rather than through the provider. Some people prefer reading, others watching or listening; add captions, transcripts and accessible downloads so everyone can choose what works for them. Offering a little guidance is crucial too, and that's what the educators are there for. New tools can be confusing for anybody, but clear, step-by-step instructions can help users gain confidence. It doesn't stop there, checking in regularly can make all the difference, review and monitor usage and content so that it stays inclusive (Iubenda, 2025).

Vygotsky's scaffolding theory, closely linked to his Zone of Proximal Development (ZPD) is the idea that a teacher or more knowledgeable peer provides temporary support to help a learner master a new skill, then gradually remove assistance as the learner becomes independent, much like scaffolding is removed from the building (McLeod, 2025). This learning theory isn't just built for traditional learning, it can also be applied to digital learning. The teacher can offer support when learning a new app or device, then as the student becomes more capable and confident, gradually reduce the support they provide until they are completely independent. Other examples of digital scaffolding include guided pathways, visual aids, self-correction tools and modelling which can be reduced or removed as the learner progresses. This theory is useful and can be applied universally, again helping to ensure inclusivity for all, and sometimes it just happens naturally without even knowing you're doing it (indeed, 2025).



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Hardware and Software isn't Rocket Science!

(AI is actually our best friend)

In the modern world, there are different software and hardware designed for everyone! In probably every workplace in the world there will be technology, machines, tablets and computers, and on these there will be programmes, often used to make the jobs of the people easier. Think about which ones you may already be familiar with. They're everywhere!

Some examples of common hardware are:

- Input devices: keyboard, mouse, touchscreen, webcam, microphone.
- Output devices: monitor, printer, speakers.
- Internal Components (the tricky stuff): CPU, Motherboard, RAM, GPU, Storage.

Some examples of common software:

- System software: Operating systems (Windows, MacOS, Linux, Android, IOS).
- Application Software: Web browsers (Chrome, Firefox, Edge), Productivity suites (Microsoft Office, Google Docs), Photo editors (Photoshop), Games.
- Utility Software (The Background stuff): Antivirus Programs, Device Drivers, Backup Software (GCFGlobal).

These are all generic examples of hardware and software used globally, however there are specific types used depending on the setting or purpose, for example in a school setting. Although young children are the real pros when it comes to technology, you wouldn't generally imagine a 3 year old producing an excel spreadsheet, the idea is that they start with basic systems that can mimic the real deal. A popular software used in primary schools is 'Just2easy - ToolSuite' an all-in-one, cloud-based learning solution built especially for primary schools. The software is split into different areas to cater to various age groups: J2e Infant Tools (JIT5) is specifically designed for younger learners, appealing to children in reception and key stage 1 (aged 4-7) with a colourful and friendly interface. J2e5 is a more sophisticated version of the tools suitable for key stages 2,3 and 4 (aged 7-16+) these tools are powerful enough for complex tasks but remain child friendly (lended, 2018). It's packed with tools, apps and games for maths, literacy, computing and plenty of cross-curricular learning, it gives teachers everything they need in one place. Pupils can sign in quickly and get straight to learning, which is always a win in a busy classroom (LGfL).

Having worked primarily in key stage 1, JIT5 has been the main basis of digital learning. The toolkit includes:

- Chart; line, block, pie and bar charts made easy.
- Pictogram; a fun introduction into data handling.
- Write; a simple to use writing tool (a choice of word banks are available, as well as experimentation with colour and style).
- Paint; paint freely with different sizes, colours, shapes, stamps, template backgrounds and pictures from a picture bank.
- Turtle; teaches children the initial concepts of direction and simple programming.

All of the skills up for grabs here will stick with them all the way through to their future careers (lended, 2018).

JIT5 is ideal for meeting the needs of all learners within a school setting. It supports additional learning needs (ALN) by providing learning that adapts. Teachers can tailor activities based on real-time progress, so pupils can learn at their own pace and level. Tools for every learning style. With eight easy to use tools, JIT5 lets children learn and show understanding in ways that work for them - through visuals, audio, interaction or writing. Child-centred design. The platform gives pupils a voice. Clear Progress and feedback. Teachers can quickly track progress and step in where support is needed. Safe and secure. The platform is designed to be e-safe, with features that help keep the online environment safe for all learners, especially those who may be more vulnerable online (edtech, 2025). JIT5 is also inclusive as it is a whole-school program. Pupils have equal access regardless of their socio-economic status, gender, culture, bilingual or multilingual skills.

John Dewey's theory of "learning by doing" or experiential education, suggests that learning happens through experience, or by getting 'hands-on'. Dewey believed that learning requires active engagement, should take place within a social context, be a democratic process, and reflects on experience drives more meaningful outcomes (Beckman, 2022). In Dewey's words 'there is an intimate and necessary relation between the process of actual experience and education'.

Dewey set out two different types of experience:

Immediate: Learning by jumping in and experiencing things first-hand, using our senses.

Mediated: Learning by taking a step back, thinking about what happened, and making sense of it.

Dewey's theory can also be applied to digital learning. Digital learning platforms and apps are built to support all kinds of hands-on learning experiences, sparking engagement and promote learning with and from others. Let's take a look how the central tenets of Dewey's theory can be applied to learning through technology:

- Experiential learning: Dewey emphasised learning by doing - and learning tech makes that easier than ever with scenarios, simulations, games and immersive tools like VR and AR.
- Active engagement: Engagement is essential for learning to be effective. Learning platforms use game-style features like badges, XP, leader boards and social features to keep learners motivated and involved.
- Learner reflection: Experience alone isn't enough - reflection is where the real learning happens. Discussion boards, journals, polls, quizzes and feedback tools give learners plenty of opportunities to pause, reflect and connect the dots.
- Social learning: Learning is social, even online. Forums, live chats, and virtual classrooms help learners connect and learn together.
- Democratic learning: Dewey believed learners should have a say, and technology makes that possible by offering flexible paths and easy access, so that learners get to choose their own journey (Clove, 2023).

So, can you see how Dewey's theory of learning also works well with J2e and specifically JIT5? Children are allowed to experiment with all of the different tools, picking up new skills as they go, and using what they have learned to progress further.

JIT5 also fits neatly into the Digital Competence framework and the New Curriculum for Wales. It lines up with the curriculum's core four purposes (hwb); ambitious, capable learners. Learners use j2e tools for writing, drawing, charting and coding, building confidence and skills that support lifelong learning. Enterprising, creative contributors. Mixing media, coding, and problem-solving lets learners bring ideas to life, along the way, they practise problem-solving and creativity. Ethical, informed citizens. Working with data, managing digital content, and reflecting on feedback builds digital responsibility. Healthy, confident individuals. Learners have a voice, whether they're creating audio, visual work, or reflecting on their learning, there's lots of space for self-expression - supporting wellbeing as well as learning (equal education, 2023).

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