

Supporting autistic pupils in primary computing

Session 1 – The Computing Curriculum in Context

Introductions

- What is your experience of working with autistic pupils?
- How confident are you teaching computing?
- What do you want to get out of the course?



Learning outcomes – Course

- Recognise the strengths and barriers to learning of autistic pupils in computing
- Develop your understanding of a range of pedagogies and approaches to teach autistic learners effectively
- Explore how to adapt materials and activities to include and engage autistic learners



Course outline

PDE 1
Computing
Curriculum in
Context

PDE 2
Applying generic
pedagogy in
Computing

PDE 3
Computing specific
pedagogy

PDE 4
Teaching excellent
computing lessons



Learning outcomes

- Describe the strengths of autistic pupils in computing and barriers to learning
- Recognise the relevance of the computing curriculum to autistic learners
- Explore resources and strategies for teaching digital literacy and online safety to autistic pupils through computing



National Curriculum: Computing



A high-quality computing education equips pupils to use computational thinking and creativity **to understand and change the world.** [...]

Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as **active participants in a digital world**



Why is computing important and relevant for your autistic students?

?



“Many of our students are very engaged by ICT. It can be incredibly motivational for ASD and SEMH learners”

It's essential both as a means to access the curriculum but also to enable them to enter the jobs market.”

“A creative curriculum that engages and encourages self-directed, exploration, problem solving, discovery and expression is completely relevant to our pupils.”

“ICT use and safety is important, pupils may have enough knowledge to use e.g. social media, but not enough to stay safe.”

Teachers quoted in COMPUTING IN SPECIAL EDUCATIONAL NEEDS & DISABILITIES SETTINGS: The Current Picture in England 2018, C. Elliott



Strengths & Barriers to Learning



Which areas of the curriculum do learners find:

- most challenging?
- Most engaging

what are the main barriers to learning they face?

What are their strengths in computing?

**Computing
Systems &
Networks**

**Creating
Media**

**Data &
Information**

Programming

Digital Literacy & Online Safety

The areas in which neurodivergent individuals have “exceeded skill” include high-level problem-solving, creative “out-the-box” thinking, hyper-focusing, and pattern spotting. “These are much-needed attributes and skills in cybersecurity.”

[Why cybersecurity leaders are actively recruiting neurodiverse talent](#)



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Language is important!

[Autism Education Trust - Terminology Guide](#)



What is Autism?

A neurological condition that affects the way a person communicates and experiences the world in three key areas:

- Social understanding and communication
- Sensory processing and integration
- Flexible thinking, information processing and understanding

<https://www.autismeducationtrust.org.uk/about/what-is-autism>



Social understanding and communication

Autistic people have differences in the way they communicate, understand and use language. They engage in social life from a different perspective (Milton, 2011). This leads to differences in how the person interacts and develops relationships



Sensory processing and integration

Sensory differences can include hyper (high) or hypo (low) sensitivity in relation the eight senses of sight, hearing, touch, taste and smell, interoception (internal sensations), balance (vestibular) and body awareness (proprioception). These differences will vary from person to person and can actually fluctuate in their responsiveness depending on a number of different factors for example the time of day or the environment.

<https://www.autismeducationtrust.org.uk/about/what-is-autism>



Flexible thinking, information processing and understanding

Autistic people have differences in their attention, interests and how they learn. This can include being very focused on particular interests. They have a different way of being flexible, so often feel safer and more comfortable with routines and structure as this lessens uncertainty.



Main barriers to learning

- Sensory overload
- Social communication & interaction differences
- Difficulties with flexibility & change
- Challenges with abstract concepts & generalisation
- Difficulty with executive function



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Every autistic person is individual in their strengths, differences and needs. They may have co-occurring conditions, e.g. learning difficulties, anxiety or ADHD.



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<https://the-art-of-autism.com/understanding-the-spectrum-a-comic-strip-explanation/>



Digital Literacy & Autism



Autistic young people:

- Are more susceptible to cyber scams
- Are more likely to engage in risky online behaviour, such as sexting and meeting up with strangers
- Are more likely to be the targets of cyberbullying and cyberaggression
- May struggle to manage their time online and develop compulsive internet use
- May be more likely to be exposed to harmful content, such as content that promotes self-harm or suicide

Internet Matters Report (2021):

[Refuge and Risk: Life Online for Vulnerable Young People](#)



Digital Resilience

“Vulnerable children need **digital competencies, problem-solving strategies**, relationship skills, independence and life skills to thrive online. Developing these skills is hampered by a focus on avoiding risk at all costs, with few opportunities to learn through managed experiences.”

Internet Matters Report (2021):

[Refuge and Risk: Life Online for Vulnerable Young People](#)



Hands-on,
interactive
activities

Practice in a safe
environment

Encourage open
communication

Build
confidence

Effective Strategies

Real world,
relevant
contexts

Accessible
content

Support
generalisation
of messages

Emphasise
strengths &
positive
experiences

Avoid
inference



Where in the computing curriculum can you develop digital resilience?



Year 1	Technology around us
Year 2	IT around us
Year 3	Connecting computers
Year 4	The Internet
Year 5	Systems & searching
Year 6	Communication & collaboration

- Consolidate online safety messages
- Provide opportunities to revisit examples throughout the year in other units and subjects
- A good understanding of how the Internet works underpins digital resilience



Resources

- [Project Evolve](#)
- <https://www.childnet.com/resources/star-send-toolkit/> - content specifically created for young people with SEND
- <https://www.childnet.com/resources> - Filter by SEND for resources
- <https://www.internetmatters.org/inclusive-digital-safety/advice-for-parents-and-carers/supporting-children-with-send/> - Advice for parents & carers
- <https://www.ncsc.gov.uk/collection/cybersprinters> - Collection of cyber security activities for 7-11 year olds



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Thank you



National Centre
for **Computing**
Education



STEM
LEARNING