Department for Education

Developing a competency framework for effective assistive technology training

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Rohan Slaughter and Tom Griffiths
University of Dundee

Government Social Research

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Executive Summary

This report considers the provision of digital assistive technology (AT) in special schools and specialist colleges. The definition of digital assistive technology includes software, hardware and services specifically designed to support people with a disability or learning difficulty, as well as accessibility features found in mainstream software and operating systems. Provision of AT in specialist education contexts is often dependent on localised expertise, or on individuals with an interest and enthusiasm for the topic. To date, no formal training pathways exist for the majority of learner-facing staff who support AT, and no agreed framework of skills and competencies informs the training that does exist. This has been cited as a barrier to the development of new AT training pathways for learner-facing staff.

This work addresses this gap by proposing a competency framework of knowledge and skills required by different job roles across the AT implementation pathway: assessment, provisioning, ongoing support and review. This framework is the result of a comprehensive review of published literature in the field, combined with exploratory work conducted by the research team with participants from specialist schools and colleges in England. Expert sources (staff working in various roles in ‘AT mature’ special schools and specialist colleges) have been consulted to determine what current AT professionals in specialist schools and colleges see as the minimum required standards for staff working across the AT implementation pathway. This work focuses on specialist provision where staff have an understanding of both the learning environment and the skills and knowledge needed to support pupils or students with additional support needs to use assistive technology effectively.

The framework highlights the benefits derived from all staff working in special schools and specialist colleges having some level of competence and skills in the AT implementation pathway. The work also identifies that, given the range of needs that are supported in special schools and specialist colleges, it is not realistic to expect all staff to have knowledge of the range of AT systems that are in use. Staff may not have the skills to undertake assessment for AT in all cases, and referral routes to specialist services should be developed where this is the case. Staff can be trained in the use of AT frameworks to support implementation, ensuring they have the core skills to identify, critique and apply new AT tools. Knowledge at the person level, understanding of specific disabilities as well as users, their preferences and relevant environmental factors is also important. Knowledge of local and national funding routes is useful. The work highlights that basic IT skills are a foundational factor in the successful support of AT by learner facing staff. At an institutional level, management buy-in and the creation and maintenance of an AT-positive environment are key, as shown in both the literature review and the focus groups.

The research also identifies the value that participants place on AT specialist roles and, indicates that where these roles exist, they provide support across the AT implementation pathway. This report highlights the potential benefits of providing support for the creation of dedicated AT specialist roles, with expert levels of skills and competence developed through experience or ring-fenced time to access specialist training. Based on the literature review and focus group findings staff in schools and colleges clearly see value in access to AT specialists and their skills, as they can support local training provision through a 'train the trainer' model, fostering communities of practice which increase AT proficiency.

Training for all learner-facing roles in special schools and specialist colleges is helpful at both pre-service and in-service career stages, and the outcomes of this work evidence the benefits of increasing the availability of the currently limited training opportunities for staff. However, resource constraints on funding and available training time remain major barriers to staff undertaking AT training, even where training needs can be identified.

The report also shows the importance of interdisciplinary working, acknowledging that different professional groups bring a range of skills and background knowledge, all of which contribute to successful AT outcomes for learners. This work supports and builds on previous DfE funded research by Prof Dave Edyburn[1], whose recommendations directly informed the project. In particular, this report highlights the benefits of increased AT training provision and also identifies that it would be helpful to develop ways of measuring training outcomes and impact.

This work may serve as the basis for future enquiry around currently available AT training and resources which, once identified, may be mapped against the competency framework. This will enable staff to identify sources of training relevant to their role and future development. The process may also facilitate a gap analysis to identify where important elements are missing, under-developed or not addressed in the current training and resource offer.

Other areas of future development identified in this report include exploring the benefits realised by development of specialist AT support services, which may act as a pan-sectoral body to organise and oversee training and development, dissemination of best practice and to act as a conduit between learner-facing staff and policy makers. In addition, this report may begin the conversation on the development of standards of practice across the four phases of AT implementation, in order to standardise the expected level of service provision in special schools and specialist colleges. These

[1] Edyburn, D. (2020) 'Rapid literature review on assistive technology in education', *Department for Education*. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/937381/UKAT_FinalReport_082520.pdf

ideas are presented to support staff working in special schools and specialist colleges to make best possible use of AT to support learners with SEND.

Acronyms / Initialisms

The following table lists the acronyms used throughout this report.

Acronym / Initialism	Expansion
AAC	Augmentative and Alternative Communication
ADL	Aid(s) to Daily Living
AHP	Allied Health Professional
AT	Assistive Technology
ATech	Assistive and Accessible Technology
CoP	Community of Practice
CP	Cerebral Palsy
CPD	Continuing Professional Development
EC	Environmental Control
ESCO	European Skills, Competences, Qualifications and Occupations
FE	Further Education
HAAT	Human Activity Assistive Technology[2]
HE	Higher Education
LD	Learning Difficulty / Learning Difficulties
OT	Occupational Therapist
PD	Professional Development
SEND	Special Educational Needs and Disabilities
SETT	Student, Environment, Task, Tools[3]
SaLT / SLP	Speech and Language Therapist (UK) / Pathologist (US)
TA	Teaching / Teacher's Assistant
TVI	Teacher of the Visually Impaired
UDL	Universal Design for Learning

[2] Cook, A.M., Polgar, J.M. and Encarnacao, P. (2019) *Assistive technologies: principles and practice*. Fifth edition. Mosby.
[3] Zabala, J.S. (2020) 'The SETT Framework: A Model for Selection and Use of Assistive Technology Tools and More', in D. Chambers (ed.) *Assistive Technology to Support Inclusive Education*. UK: Bingley: Emerald (International Perspectives on Inclusive Education), pp. 17–36. Available at: https://doi.org/10.1108/S1479-363620200000014005.

Introduction

Assistive technologies (AT) are products and devices which are designed or adapted for people with disabilities. Within schools and colleges, AT is often deployed to support learners with a range of special educational needs and disabilities (SEND). This report summarises published literature on AT training for education professionals, together with insights on opportunities for further development in this area. The literature review is supported by a qualitative investigation into the training needs and preferences of education professionals specialist schools and colleges in England. Together, these activities provide a snapshot of current AT training provision and needs, which are then synthesised into a proposed competency framework for the development and deployment of training opportunities to meet the growing needs of the AT workforce. This is in the context of an increasing number of pupils being diagnosed with SEND[4] (special educational needs and disability) in England.

Context: Defining Assistive Technology

It has been routinely observed that defining assistive technology (AT) is difficult, given that in its broadest sense, AT includes all products, services and systems that improve the health, functioning and independence of individuals[5]. As such, general definitions of AT include technologies that support people with a range of communication, sensory or physical impairments.

In his 2020 *Rapid Literature Review on Assistive Technology in Education*[6] Prof Dave Edyburn cites AT within the context of both mainstream and educational technologies, effectively defining a subset of AT used in education, or which supports access to learning. This definition includes both specialist products and accessibility features that are now readily available in mainstream, off-the-shelf products and software.

The need to properly define electronic AT as a distinct subset has led to the coining of the term ATech; a contraction of “assistive and accessible technology”. The term is properly defined in the 2023 ATech Policy Lab report *Frontline Accessibility: Building ATech Awareness and Confidence Among Public Service Professionals*[7] as follows:

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[4] Department for Education. (2024) *Special educational needs and disability: an analysis and summary of data sources* Research Report. Department of Education. Available at: https://assets.publishing.service.gov.uk/media/66bdc2de3effd5b79ba490fd/Special_educational_needs_and_disability_analysis_and_summary_of_data_sources_Aug24.pdf (Accessed 21 January 2025).

[5] World Health Organization and UNICEF (2022) *Global Report on Assistive Technology*. Geneva: World Health Organization and the United Nations Children’s Fund (UNICEF).

[6] Edyburn, D.L. (2020) *Rapid literature review on assistive technology in education: Research report*. Research Report DFERPPU/2019/038. Department for Education.

[7] Vabulas, G. (2023) *Frontline Accessibility: Building ATech Awareness and Confidence Among Public Service Professionals*. ATech Policy Lab. Available at: https://www.policyconnect.org.uk/research/frontline-accessibility-building-atech-awareness-and-confidence-among-public-service (Accessed: 3 October 2024).

Assistive and accessible technology (ATech) refers to digital tools that disabled people use to break down barriers. As such, ATech encompasses both:

(i) *assistive technology* products that are designed primarily for disabled users, such as augmentative and alternative communication devices, screen reader software, or an adaptive games controller.

(ii) *accessible technology* products that are designed to work for all tech users, by taking accessibility needs into account: for example, a website that can be navigated with a screen reader, or a smartphone operating system that includes accessibility features such as dictation. In addition, any technology product becomes an accessibility tool whenever disabled people use them as such, e.g. when someone opts to join a meeting via video call to manage fatigue or uses a Generative AI tool to simplify the language in a document.

This term serves to differentiate electronic or digital AT both from other types of AT such as eyeglasses, wheelchairs, mobility aids, aids to daily living, self-care products and medical technologies, whilst also separating it from technologies used to support all learners (EdTech) and methods of teaching and learning using technology as a delivery modality (eLearning).

The term Assistive Technology (AT) has been used in previous DfE reports and to avoid confusion the term is being used in this report. Digital Assistive Technology and ATech are used interchangeably, and AT is used in this report to refer to this group of technologies, products and services.

Context: Assistive Technology in Education

Schools and colleges now have unprecedented access to AT, as a result of considerable investment in remote education and accessibility features which can reduce or remove the barriers experienced by learners with SEND. In his 2020 rapid literature review[3], Prof Edyburn set out the available evidence concerning AT use and outcomes in education. In Edyburn's report, whilst acknowledging that the overall quality of the evidence is often at the level of expert opinion rather than empirical evaluation of alternative AT service delivery models, five components necessary for successful AT implementation were identified:

- Develop personnel preparation pathways that provide general AT knowledge
- Develop personnel preparation pathways that provide specialised AT knowledge

- Establish AT Teams
- Standardise AT evaluation procedures and protocols
- Connect AT devices, AT services, with AT outcomes

Edyburn's findings highlighted that AT training for staff in specialist schools and colleges was an area of need, and this report confirms it is still a need. His report observes that "teachers need training in order to maximise the effectiveness of technology" (p.44) and draws parallels with the wider EdTech literature base, which underlines the value in technology training for teachers in order that they might better support learners. Edyburn's report identifies pre-service and in-service teacher professional development and training as a "critical need", noting that a lack of AT awareness amongst frontline education staff is a major obstacle to students receiving appropriate AT support and intervention.

Context: Upskilling the Assistive Technology Workforce

In 2023, the Cabinet Office, Disability Unit commissioned the Global Disability Innovation (GDI) Hub[8] to produce a report of AT capacity and need in England. Amongst its recommendations was the need to upskill the AT workforce to meet the needs of disabled technology users. Whilst the GDI Hub report is not specifically focused on education, educator roles are in scope. The report highlighted access to training as a significant barrier to AT provision and support, noting that the lack of consistent training approaches, professional networks, CPD-level training or an agreed AT competency framework made provision much harder for a range of professionals who use or support AT. This is consistent with the global picture of the AT workforce presented in the WHO and UNICEF *Global Report on Assistive Technology*[3].

These reports set out that there is a need for AT training at all levels – from higher level training dedicated to developing AT specialists to CPD level training for those working with disabled technology users on a day-to-day basis. Whilst previous work agrees that AT training is required, what is less well defined is the nature and level of AT training or competence that is required by staff in a range of roles and types of provision.

Context: AT Implementation

An underpinning construct of this work is that AT implementation in special education contexts tends to follow four phases:

[8] Austin, V. *et al.* (2023) *Assistive Technology Changes Lives: an assessment of AT need and capacity in England*. Cabinet Office, HMG.

- **Assessment:** The process of collating information about current or intended AT users, and using this information to identify appropriate AT tools, strategies and interventions. This may include both formal and informal assessment methods, trials of equipment and outcome measurement.
- **Provision:** The process of sourcing and providing AT tools and resources. This may include funding, procurement, setup, training and other activities related to the introduction of new AT for an individual learner or a whole school and college.
- **Ongoing Support:** The process of supporting a learner and their immediate support team (both in school and at home) to use their AT system successfully. This may include aspects related to maintenance of the equipment, as well as providing support and training for those involved in day-to-day use of the equipment.
- **Review:** The process of ensuring the AT that has been provided remains useful, through identifying review points in the learner's AT journey. This may include regular, scheduled review or being able to recognise triggers for review or changes to the AT system.

In this report, the phrase "AT implementation" is used to refer to this four-phase model.

Context: Existing AT Competency Frameworks

The authors and project partners of this report have previously been involved in the creation of three AT competency frameworks; these are focussed on specialist AT roles. Two of these, the ESCO Role Definition for Assistive Technologists[9] and the AT Competency Framework used as part of the MSc EduAT at University of Dundee, focus on competencies specific to the role of the Assistive Technologist, acknowledging that this role may be drawn from a range of professional backgrounds. The other existing framework is the Natspec TechAbility Standards[10], which were derived to benchmark AT services in UK specialist provision. These frameworks have been drawn upon by the authors as required.

The competency framework developed as part of this project considers competencies for a range of job roles involved in the implementation of AT in specialist schools and colleges. This is distinct from the existing AT competency frameworks which focussed on AT specialist roles.

[9] European Standards, Competencies and Occupations Database for Assistive Technologist: https://esco.ec.europa.eu/en/classification/occupation?uri=http://data.europa.eu/esco/occupation/4e82464b-e9d7-4d51-9116-294ab40c5169

[10] Natspec TechAbility Standards: https://www.techability.org.uk/techability-standards/

Context: IT and EdTech

Prof Edyburn proposed in his rapid literature review that general knowledge and understanding of technology is a variable that may influence the effectiveness of educational technology, including AT. He cites a previous review carried out by the Jefferson Education Exchange[11], which summarised 12 clusters of variables that may influence successful use of such technologies. In particular, the groups of variables termed *Technology Knowledge*, *Infrastructure* and *Professional Support* are factors that the research team for this report had also identified as being crucial to supporting AT in schools and colleges.

It would seem logical that basic IT literacy would impact in some way on school and college staff's ability to effectively support AT, in particular more complex systems. The availability of reliable basic IT infrastructure, and the support of that infrastructure are also variables that may prove crucial barriers and facilitators to successful AT use in many contexts.

For this project, we wished to explore the viewpoint that digital and IT skills, infrastructure availability and support are foundational to successful implementation of AT in specialist school and college contexts. This concept is explored in both the literature and the subsequent focus group research.

Context: Digital Life Skills

Digital life skills are an important component of digital literacy for disabled and non-disabled learners alike. The ongoing support and development of these skills is particularly important for AT users who may be given access to the digital world for the first time, through the provision of AT. Staff involved in AT implementation therefore have an important role to play in ensuring AT users can safely and effectively access digital life skills. This report explores the skills and competencies that staff in specialist education settings need to support students in safely learning to navigate the digital world.

Project Partners

This work is led by University of Dundee (Rohan Slaughter and Tom Griffiths). The project partners supporting the work are Ace Centre (Bob Birchall and Katy Leckenby), The Karten Network (Dawn Green) and Natspec TechAbility (Fil McIntyre). It is acknowledged that the organisations that the research team are employed by also provide training in digital AT. The University of Dundee provides the MSc in Educational

[11] Jefferson Education Exchange. (2019). The EdTech Genome Project. Retrieved from https://www.slideshare.net/DanBrown143/the-edtech-genome-project-the-jefferson-education-exchange-170986887

Assistive Technology, which is the only known Masters level programme in the world which focusses on digital Assistive Technology. The Ace Centre and Natspec TechAbility service provide a range of AT related training and support services. Due to the small number of organisations that provide AT training, and the relatively small size of the AT workforce in special schools and specialist colleges it is not surprising to find that project participants referenced the AT training and support offered by the project partners. The project team acknowledge their involvement in AT related training, support, consultancy and research.

Methodology

The research received ethical approval from the ethics committee within the School of Science and Engineering at University of Dundee (Approval Ref: UOD-SSREC-Staff-Comp-2023-002).

Aims and Objectives

The overall aim of this project was to more fully understand the training needs of AT professionals working in specialist schools and colleges. The knowledge and skills required by different professional roles at different points in the aforementioned 4 phase AT implementation process were investigated to gain a full picture of what the special school and specialist college workforce believes to be the training needed to support learners using AT. It is important to note that as purposive sampling was used to approach people working in known “AT mature” contexts, this is not seen as a representative sample, rather it can be seen as an AT experienced sample. The project’s objectives were:

- To explore what is reported in the published literature about AT training for staff in specialist school and college settings
- To consult specialist school and college staff with AT experience on their perceptions of what skills and knowledge are relevant to the assessment, provisioning, support and review of AT in education contexts
- To develop a framework of suggested competencies and skill levels, using the knowledge and experience of the research team to interpret the results

Research Questions

The key research questions (RQs) guiding this project were:

RQ1. What skills and knowledge do student-facing staff in special schools and colleges require to ensure that digital AT effectively supports their students?

RQ2. What skills and knowledge are needed to effectively assess pupil AT needs?

RQ3. How do staff become aware of and access the AT that is available for their students?

RQ4. What skills and knowledge are needed to effectively support the use of AT in the classroom?

RQ5. What skills are required to monitor effective use?

RQ6. What skills and knowledge are needed to effectively support pupils to develop digital life skills, including the use of assistive and accessible technology?

RQ7. How do the digital AT professional development needs of staff vary according to:

- Staff role
- Type of SEND
- Student's levels of educational development
- Age of learner
- Career stage

Methods

A mixed methods approach was developed to address the research questions, this included:

- A review of existing literature around AT training; how and to whom it is delivered, how it is perceived by professionals and any gaps in training provision which have been identified.
- An online survey to explore how the responding members of the AT workforce in special schools and specialist colleges identify and access AT training and support, and to contextualise the focus group participants.
- Nine online focus groups using a set of structured questions and tasks designed to explore
    - The knowledge, skills and attributes required to support all stages of AT implementation.
    - The knowledge, skills and attributes participants identified to support AT users to develop digital life skills.
    - Other AT needs and requirements were explored.
- A rating exercise carried out by focus group participants to determine the levels of IT and AT competence required by various staff roles. A second rating exercise identified the level of competence for the same roles across the four stages of the AT implementation pathway.
- Analysis of data from the above project work, including the literature review, online survey, focus groups and rating tasks resulted in the generation of a proposed AT competency framework for staff working in specialist schools and colleges.

Literature Review

To support the investigation, a review of existing literature on AT training was conducted. A rapid review methodology was adopted, as this is better suited to the task of appraising literature in smaller fields or over specific, limited time periods.

A summary of the outcomes is presented here, and the sources used in the review process are included in Annex 1.

Findings

A total of 24 sources were included in this review. Nineteen reported on studies with a defined methodology, including three doctoral level theses. Two rapid or systematic review papers and three commentary / perspective pieces which included AT training made up the remainder of the corpus.

The search strategy endeavoured to include all English-speaking countries; however, it was notable that only one source meeting all inclusion criteria was focused on the UK. The majority of sources proposed a definition of AT. The most frequently cited definition (in 10 sources) was that offered by the Individuals with Disabilities Education Act (IDEA), a US law which defines AT as:

> "Any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve functional capabilities of individuals with disabilities"[12]

It is perhaps unsurprising to note this, given the predominance of studies from the USA, however it is worth noting that many sources included this definition before further refining it to something closer to the definition of digital AT included in this report.

Current Training Offers

Sources reviewed indicate that no one group of AT professionals receives what they perceive to be adequate training at any career stage. The general picture is one of training being inconsistent (Andzik *et al.*, 2017) or reactive (Ajuwon *et al.*, 2016; Chambers *et al.*, 2022), often responding to a specific situation, such as a learner presenting with a need for a particular technology. Many existing training offers are therefore specific to a particular type of AT or a specific device.

[12] Individuals with Disabilities Education Improvement Act. (2004). 20 U.S.C § 602.

Sources tended to discuss current training offers in two distinct career development stages: either **pre-qualification** or **in-service CPD**. Multiple studies highlighted that the provision of training at both these career stages is variable, lacking and, in some cases, entirely absent: Atanga and colleagues (2020) identified that around 83% of US special school teachers surveyed had no AT teaching as part of their college degree. Lamond and colleagues (2023) found that around 58% of middle and high school US teachers with SEND experience either had not received, or could not recall receiving, any AT training in their professional training. This figure was slightly lower in the subgroup of teachers who had taken pre-qualification modules in special education. The feeling that current pre-qualification in AT training is inadequate is reflected in responses to a large-scale survey of AT professionals (including teachers, therapists and other allied professionals) in the USA, where only 56.8% of professionals felt their training was adequate to prepare them to conduct high-quality AT evaluations, and over half of respondents felt that their professional training was not adequate to discharge all duties of the AT specialist role (Arthanat, Elsaesser and Bauer, 2017).

The need for more pre-qualification AT training was articulated in several papers. In the survey study conducted by Arthanat and colleagues (2017), almost all participants responded positively to the proposition that AT education should be included or increased in graduate educational programs, and pre-service and in-service training. Jones and colleagues (2021) highlight:

> "[the] importance of teacher preparation programs ensuring that all education majors (general and special education) understand the distinctions between the vast variety of [AT] and how [AT] increases functional skills, increased access options, and embeds accommodations within the classroom."

Whilst this quote encapsulates the general feeling across many sources that more pre-qualification AT training is desirable for teachers and other professions, Morash and Siu (2017) raise a key issue with this being the only focus of training provision: pre-service training may provide limited value as it is by nature time-specific and the rapid speed at which new technologies are released and updated may make pre-service training obsolete or limited in value within just a few years. An Australian study, Karlsson (2014) also highlights that many key stakeholder groups in AT delivery (such as teaching assistants) do not undertake any form of professional training, which is also the case in other countries.

These two factors, coupled with the impossibility of pre-qualification training covering every type of AT, every disability and student need, gives rise to the need for in-service CPD for all AT professionals. In-service CPD appears to be a more common way of gaining or increasing AT knowledge and skills and indeed one study (Schaaf, 2018) concluded that teachers are dependent on post-qualification CPD for their AT knowledge,

skills and experience. The same study concluded that CPD is also a more effective way of giving teachers “hands-on” time with devices and systems, which was shown to be the type of training most valued by teachers responding to this study.

Sources tended to position CPD as being more contemporaneous, better targeted to specific needs, with more opportunities to learn about new technology and developments in interventions. There is also a clear enthusiasm for CPD, with 91% of educators (including primary and secondary teachers, special needs assistants and guidance counsellors) surveyed in one Irish study (O’Sullivan *et al.*, 2023) reporting that they would engage in a professional development programme or a postgraduate training course on AT. The majority of these educators had used AT with students, but most (85%) felt they needed more support.

The importance of **peer-to-peer training**, of learning from colleagues in one’s own and other professions, was a theme across several papers. Teacher of Students with Visual Impairments (TVIs) in one study (Ajuwon *et al.*, 2016) highlighted the importance of collaboration with other services and professional groups as a way to receive support and training. Andzik and colleagues (2017) identified that teachers supporting augmentative and alternative communication (AAC) were generally positive about receiving training from speech and language therapists (SLTs), which is an understandable finding, given the function of that technology. Participants in one study suggested that creating a peer-learning environment was “a strategy to demystify and aid the implementation of a device in the classroom” (Karlsson, 2014, p. 104).

The majority of sources in this review have **teachers** as their sole or primary participant group or discussion focus. Other groups of professionals represented include **therapists** (speech and language therapists, occupational therapists, physiotherapists), **teaching assistants** and **classroom support staff**, **AT specialist roles**, **suppliers** and **manufacturers** and other roles such as guidance counsellors. Where multiple professional groups were included, sources tended to discuss their training needs in general terms. One review suggested that “[general training in] roles and responsibilities for team-based AT decision-making in order to understand who might need AT, how to evaluate various AT interventions, and the types of AT outcomes that should be anticipated” (Edyburn, 2020, p. 44) is needed by teachers, SLTs, OTs, and special education administrators. Specialist training is proposed as a need for those in AT Specialist or SEND leadership roles.

It was notable that no study included IT staff or IT support workers by name, although some studies included a general “other” category which may have included some participants from this field.

One group of participants who are perhaps underrepresented in the included sources are teaching assistants (TAs). Several researchers (Chambers and Berlach, 2015; Karlsson,

Johnston and Barker, 2018) positioned the TA as a key stakeholder in the successful implementation of AT systems, observing that they are often the people with the most consistent contact with the learner using AT. Indeed, in Karlsson and colleagues' study, all participant groups (children, parents, allied health professionals, teachers) agreed that the TA was one of the more important people for successful technology outcomes. One participant in this study observed:

> "I think the [TA is] often the essential point for working with the child" (Karlsson, Johnston and Barker, 2018, p. 768).

Participants in one study (Karlsson, 2014) highlighted that a confident, motivated TA with AT experience and knowledge could make a huge difference to implementation, and could reduce the pressure on parents. Despite their vital role, it is noted (Chambers and Berlach, 2015) that TAs can find training in general, and AT training in particular, hard to access.

Access to training was a theme across several sources, with the increase in **remote, online or virtual training** positioned as a way to deliver training to hard-to-reach stakeholder groups or those with time constraints (Schaaf, 2018). O'Sullivan and colleagues (2023) found that over half of their survey respondents (53%) wanted training to occur during school time, and just under half (43%) expressed interest in engaging with online training.

Less frequently discussed was the question of what level of training should be delivered, and what recognition (if any) it should bring. Many sources drew a distinction between **formal** and **informal** training, although no source defined either term. Most CPD training reported was seemingly unaccredited or locally accredited, although some proposed the idea of training being rewarded with **CPD points** or credits. The value of such credits is clear to registered professionals such as teachers, although it should again be noted that many AT stakeholders such as TAs do not have a professional body that awards or recognises such points.

The question of **role accreditation** was addressed in several sources (Maich *et al.*, 2017; Edyburn, 2020; Slaughter, Waller and Griffiths, 2023) where the need for recognised **AT Specialist** roles was discussed, with job titles acknowledging the higher levels of training undertaken by the postholder:

> "[In addition to teacher training in AT], formalized, localized role or credential could be developed as a response or added to the responsibilities of local technology lead teachers (e.g., [AT] lead), and such additional training could be recognized in an online, open access provincial directory." (Maich *et al.*, 2017, p. 18)

Educators (including primary and secondary teachers, special needs assistants and guidance counsellors) surveyed in one Irish study by O'Sullivan and colleagues (2023) reported an enthusiasm for **university accredited qualifications**, with 42% of respondents saying that they would prefer to engage in this type of training over other types of training, and 50% willing to consider it. In their chapter reflecting on setting up and delivering a university accredited AT course, Slaughter and colleagues (2023) note that accredited learning of this sort forms part of a wider training ecosystem, observing:

> A range of training is required at multiple levels, for people in different roles, and at different stages of their careers. This includes [university accredited courses], for those wishing to become AT specialists. Higher level courses for existing professionals (including teachers, speech and language therapists, occupational therapists and various technical roles) are needed for a range of colleagues already working to support users of AT. A very much larger number of CPD entry level training opportunities are required for teaching assistants, teachers, therapists, parents, social care staff, and anyone else working to support AT users. (Slaughter, Waller and Griffiths, 2023, p. 463)

A lack of formal training opportunities left gaps that professionals often reported needing to find alternative ways to fill. Several papers also highlighted that professionals will pursue **self-directed learning**, often using **social media**. The need for self-teaching around AT was reported by all participants (*n* = 5) in one study (Lamond, Mo and Cunningham, 2023). Participants in this study cited this as a way to fill the gaps resulting from a lack of formal training ("I find there's not a lot [of training], and I have to do the learning on my own."), but also highlighted that it could provide a useful way to keep up with changing technology in a rapidly evolving field ("[…] you have to be responsive particularly [to] technology, it changes so fast."). In several papers (Andzik *et al.*, 2017), participants reported consulting **AT suppliers** for training, in particular around specific devices or intervention approaches. AT suppliers and manufacturers play a vital role in the AT training ecosystem, as further evidenced by this professional group being the largest participant group in the survey of AT service providers carried out by Arthanat and colleagues (2017).

Perceptions of Training

It should be noted that the perception of training overall was overwhelmingly positive. There was no study or paper where over-training or too much training was reported and the general summary is that AT training, in whatever form, was valued and wanted by special education staff, albeit with an acknowledgement that training was one of a number of competing demands and priorities.

The current lack of training opportunities is viewed by staff as a barrier to AT use. In several studies (Ajuwon *et al.*, 2016; Schaaf, 2018; Lamond and Cunningham, 2020; Huang, 2022; Lamond, Mo and Cunningham, 2023), participants were asked to share factors that influenced their use of AT in the classroom. In these studies, a lack of training routinely appeared in one form or another amongst the top results.

The **availability** of training was a clear theme across sources included in this review. Lack of training opportunities was cited as a barrier in several sources (Ajuwon *et al.*, 2016; Huang, 2022) who noted that, when professionals recognise their learning needs and undertake to identify CPD opportunities, the availability of these opportunities naturally determines whether professionals are able to address their learning goals and fill knowledge or experience gaps.

Whilst lack of training is a clear barrier to successful AT implementation, it is perhaps as interesting to explore the barriers that exist to special education staff undertaking training where it *does* exist. Several studies highlighted that staff are not always **aware** of existing training offers (O'Sullivan *et al.*, 2023), or do not know where to go to find sources of training (Ajuwon *et al.*, 2016). Once again, there is a sense that this is particularly the case for staff such as TAs who lack a professional network which might disseminate training information.

Funding for training was also cited as a barrier, with over one third of participants interviewed by Andzik and colleagues (2017) reporting that their schools provided no funding for staff AT training. Schaaf's (2018) survey results highlight an interesting angle to the barriers around lack of funding: the top priority for available funding is the acquisition of AT required by students' Individual Educational Plans (IEPs), but this leaves little or no surplus for additional devices or training, meaning staff do not have the opportunity for hands-on time and experience with AT devices.

Time allocated for training was another theme across several papers, with teachers highlighting "demanding schedules at work" (Schaaf, 2018, p. 179) as a factor limiting their available time for training. Papers discussing remote or online training delivery (Maich *et al.*, 2017; Hardesty *et al.*, 2021; Adams, 2022; Slaughter, Waller and Griffiths, 2023) propose that flexible, even asynchronous learning resources can be part of the solution to this, although Hardesty and colleagues (2021) note that even online courses can clash with other teaching commitments.

Effectiveness of Training

Evaluating the effectiveness of existing training offers is challenging, as no single measure is appropriate for objectively measuring the phenomenon (Schladant *et al.*, 2023a). This limits the generalisability of specific results; however, some general themes are evident across the included sources.

The most frequently used measure to evaluate training effectiveness was professionals' **confidence** in delivering AT support and interventions. Alghamdi (2022) notes that teachers' confidence in using and implementing AT is related to their previous successful experiences, highlighting that not providing sufficient training may leave teachers feeling unprepared. This is supported by O'Sullivan and colleagues, whose survey results showed that teachers are concerned over their lack of confidence with AT, which appeared to "stem from a lack of training" (2023, p. 7). Schaaf (2018) observed that confidence was increased by teachers having more hands-on time with devices and recommends that schools should prioritise getting devices into the hands of teachers, so that they are better prepared to identify student need and support existing AT users. Huang (2022) explored teachers' **self-efficacy**, which was found to be positively associated with technology integration in the classroom and better student outcomes. In the same study, the availability of AT training was positively correlated with teachers' confidence in delivering AT interventions.

Several studies explored how training and experience change perceptions of the **value or usefulness of AT**. Lamond and colleagues (2023) observed that perceived usefulness of AT was predicted by teachers' access to resources and their knowledge of AT, although they noted that teachers' "formal" AT training did not add statistically significantly to this prediction. This finding supports the value of in-service CPD training, with ongoing contact and experience with AT seemingly increasing its perceived value to teachers.

Some studies measured **use of AT** before and after training; either observing and counting the instances of AT use or rating the level of AT usage on an ordinal scale. Adams (2022) counted the number of different AT items from a prescribed toolkit used by teachers before, immediately after and two-weeks after a virtual AT coaching programme, finding that AT use increased and was maintained in all cases (n = 3). Schladant and colleagues (2023) coded observations of teachers' AT use before and after training, using a bespoke rating scale, noting increased use of AT to support learners following a training intervention.

Several studies highlighted that training is part of developing a mature AT context. As such, environmental factors such as supportive management structures and interdisciplinary working were highlighted by several sources. Morash and Siu (2017) undertook to quantify the impact of a supportive professional network by examining one particular aspect of the transdisciplinary working model – professionals' membership of a **community of practice** (CoP). CoPs are defined as "groups of people who share a concern or a passion for something they do and learn how to do it better as they interact

regularly"[13]. Morash and Siu propose that the voluntary membership of such a network can support peer-to-peer learning, CPD and responsive problem solving around AT, through the sharing of resources, knowledge and experience. In a large-scale survey study with TVIs (*n* = 505), the authors of this study showed "a significant positive relationship between participants' estimated levels of AT proficiency and identification with a CoP that values AT" (p. 7) – a relationship that further analysis showed could not be explained by participants' levels of pre-service training or years of experience.

Skills and Knowledge

Few sources in the review made mention of the specific content of current training offers, with comparatively little discussion of the specific knowledge, skills and competencies targeted by training. Morash and Siu (2017) identify four domains of AT proficiency that may be targeted by training programmes of professional development activities, validated in a previous work by the same authors: **choose**, **fund**, **ability/use** and **integrate**. The first two domains are characterised by a professional's willingness and resources, the latter two by their willingness and ability. These same domains were used as the basis for measuring teachers' self-efficacy is the study carried out by Huang (2022).

One study (Lamond and Cunningham, 2020) highlighted a significant positive, linear relationship between teachers' perceived usefulness of AT and their basic **computer literacy**. This study found that teachers had on average, intermediate levels of computer literacy, which the authors defined as a measure of proficiency with common computer tasks. The importance of basic computer literacy was also highlighted by Slaughter and colleagues (2023), whose training offer draws on the ESCO role definition for the Assistive Technologist[14], which includes knowledge and skills from the fields of education, health and therapy, and information technology.

Elsewhere, studies looked at the use of **AT frameworks** and their application in schools and colleges. The use, or otherwise, of these frameworks was not discussed in many studies, although Karlsson (2014) reported that over three-quarters (77.9%) of school staff and allied health professionals surveyed either had never used or were not sure if they had ever used any such framework to guide decision-making. The most commonly referenced framework across all sources was the SETT (Student, Environment, Task, Tools). Training in the use of specific frameworks was described in some studies (Evmenova, 2020) as being part of pre-service training, although Schladant and colleagues (2023) provide an argument for CPD training moving away from training on

[13] Wenger-Trayner, E. and Wenger-Trayner, B. (2015) 'Introduction to communities of practice - a brief overview of the concept and its uses'. Available at: https://www.wenger-trayner.com/introduction-to-communities-of-practice/

[14] https://esco.ec.europa.eu/en/classification/occupation?uri=http://data.europa.eu/esco/occupation/4e82464b-e9d7-4d51-9116-294ab40c5169

specific devices and focus instead on the use of such frameworks to provide individualised assessment and planning.

Of specific relevance to teachers was a recurring theme of training needing to foreground the **integration** of AT into the existing curriculum. This appeared in several studies (Karlsson, 2014), highlighting that AT training should be closely related to the curriculum so that AT use does not become a goal in itself, but rather retains a functional aim. Jones and colleagues (2021) exemplify the risks around focusing too much on frameworks and tools, exploring pre-service teachers' knowledge of AT devices and software, as well as use of an AT framework (SETT), through a survey and case study example given to participants before and after a training intervention. The Pre-training participant responses often included discussion of using teaching strategies or accommodations to support learners. Mentions of these were absent from the post-training survey, however, with focus exclusively shifting to the use of AT devices. Whilst acknowledging the small numbers involved in the study, the researchers noted the importance of focusing AT training on the integration of tools and strategies:

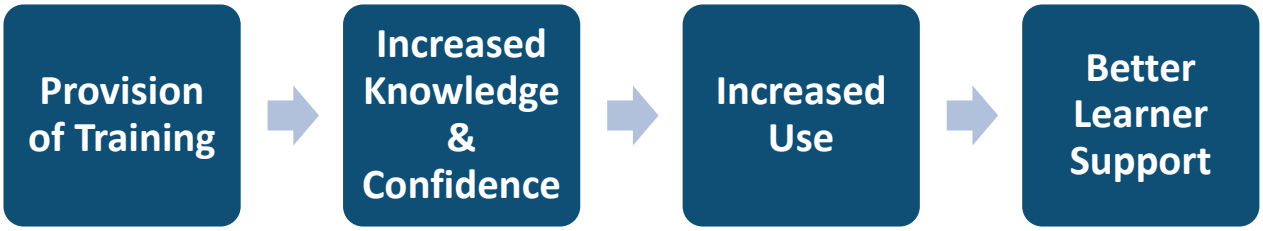
> "Perhaps, after the intervention, pre-service teachers were hyper-focused on the selection of technology and the application of SETT, which would explain the focus of their responses on the postsurvey. Future training should specify that teaching strategies and accommodations can be used in conjunction with appropriate AT." (Jones *et al.*, 2021, p. 281)

Discussion

This review set out to explore the current AT training landscape, the impact of AT training and the perception of current training offers by special education staff. From a synthesis of the included studies, it seems clear that professional training in AT is highly valued by staff in special education contexts. The review highlights that professionals generally feel training is something they are motivated to engage with, but that they may find difficult to source, for a variety of reasons.

What emerges most clearly is the relationship between the provision of training and teachers' use of AT. Demonstrated in several studies, training has a positive impact on teachers' confidence and on their understanding of the value of AT in supporting learners. This in turn seems to result in increased use of AT, or an increased willingness to try AT with learners. This appears true of all training, irrespective of timing or delivery method, and is shown in both qualitative and quantitative studies reviewed here.

Figure 1: Relationship between training and learner AT support



Despite this positive impact, it remains the case that staff find AT training hard to source, either because it is not available or because various barriers related to awareness, capacity and funding limit the opportunities. Ensuring time and funding for training are available for staff is of equal importance to the development of new training offers.

The synthesis also revealed subtle differences in which training is most effective for professionals at different points in their career development. Whilst no studies were found which reported specifically on England, the literature from other English-speaking countries suggests that pre-qualification training is often not provided to teachers or allied health professionals. Staff engaging specifically with special education qualifications or modules are slightly more likely to have had some training in this area by the time they qualify. The precise value of such pre-qualification training is hard to ascertain from the sources included in this review: several sources highlight pre-qualification training as a factor in increasing the AT confidence of teachers, whilst others highlight that such training is often quickly outdated and seldom embedded in practice, which may limit its usefulness. Pre-qualification may have an important role to play in educating professionals in the use of AT assessment frameworks or in the teaching of underpinning skills such as computer literacy, which appear to support increased confidence in later willingness to trial AT. The content of pre-service training programmes and the usefulness of these to education staff entering employment is an important area for further study.

Regarding post-qualification or in-service training, several points emerge from this review. There is a need for CPD training to be available to a range of staff groups and, by extension, targeting a range of levels of experience. Teaching Assistants, for example, play a vital role in AT delivery but often find training hard to access or, in some cases, feel training is pitched at those who already have experience. Several studies highlight that CPD training is a better method for upskilling staff on the use of AT to support learners with specific disabilities, on new technologies or on specific interventions.

Consideration also needs to be given to the delivery of training. Several studies indicate that flexible training opportunities such as those provided by online teaching and learning

are effective ways to fit training around other demands placed on staff in specialist schools and colleges. However, several studies appear to support the notion that hands-on experience with AT devices is also an important component of increasing staff confidence and knowledge of AT, so approaches that blend delivery methods may be more effective. Elsewhere in the literature, there appears to be an interest in formal, accredited learning for special education staff, including training that garners recognised CPD points, academic credits, recognised awards and post-graduate qualifications. It is likely that there is a needs hierarchy for AT training, with a large number of staff needing basic training and smaller number needing more advanced, specialist training. The reported need for access to AT specialist roles in several studies would support this finding.

This synthesis found evidence that training targeting all stages of the AT implementation pathway is important: including identification, selection, provision and ongoing support. This allies with the transdisciplinary nature of the AT workforce, with various professional and staff groups having roles across the AT provision pathway, which may result in a breadth of training needs.

The embedding of training in real-world practice is another important point highlighted by several studies. Training on AT tools in isolation appears to result in an over-reliance on technology, with tools taking precedent over task. Similarly, there is a need to establish support frameworks for AT professions, using communities of practice or train-the-trainer approaches to support the application of knowledge and skills applied through training. Given the comparatively small size of the UK AT workforce, it is encouraging to note that such networks appear to be equally effective whether they are local or geographically disbursed, connected using conferencing and remote meeting tools.

Finally, considering the content of qualitative and quantitative studies included in this synthesis, there appears to be a lack of consistent outcome measurement relating to the effectiveness of training. An area of future investigation could be to define the relevant components of an AT training outcome measure which, from the sources included here, might include staff confidence, measures of the frequency and effectiveness of AT use by both staff and learners, and change in learner's outcomes.

Limitations

It should be acknowledged that one limitation of this review is that little of the literature is from the UK, which may limit the applicability of some of the information. However, the general principles of training increasing knowledge, confidence and use seem applicable to AT delivery in most developed countries. As only sources in English were included, the generalisability of this review is limited to English speaking, predominantly Western countries.

A further limitation is the terminology involved in searching the AT literature. As several researchers have noted, AT terminology is not standardised and this is especially the case when seeking to define a subset of AT relevant to special education. It is possible that some sources could have been excluded that contained information or insight, although the review process and the reliability checking undertaken as part of that process should have mitigated the effect of any such selection bias.

Finally, the review was necessarily limited in scope to a focus on reports of training. Mapping of existing training offers was not part of this review, and it is therefore possible that reviews of training programmes conducted by schools and colleges, charities and other organisations, including AT assessment centres and suppliers, are excluded.

Survey

Introduction

An online survey was undertaken using purposive sampling. The purpose of the survey was to obtain the views of staff working in specialist schools and colleges that were known to be ‘AT mature’ in order to obtain informed views as to the skills and knowledge required to support learners across the AT implementation pathway (assessment, provisioning, ongoing support and review).

Sampling

Due to the exploratory nature of this research, a purposive sampling strategy was adopted. The research team identified an “expert sample” through review of existing contact lists and databases, resulting in a list of potential participants whose experience and working context would likely offer relevant insights on the research questions. This sampling method was specifically chosen to obtain the views of special school and specialist college staff who are working in ‘AT mature’ contexts. The sample is therefore not representative of special school and specialist college staff members more generally, who may have less knowledge and/or experience with AT than the sample of staff surveyed here.

Participants

An initial email was sent to 144 potential participants (specialist school and college staff across all roles, inclusive of teachers, leaders, learning support, AT specialists, therapists etc.) in April 2024, inviting them to take part in the survey. A further two follow up emails were sent to the same copy list, aiming to increase recruitment. A total of 36 participants (approx. 25%) completed the survey. All participants completing the survey were invited to take part in a subsequent focus group study, with 22 participants enrolling.

Materials and Methods

The survey was split into three parts, preceded by an online consent procedure. The first asked about participants’ role and their working contexts. The second part explored where participants currently accessed AT support and training, as well as asking for views on whether current training offers met their requirements and those of their colleagues. The final part explored how AT assessment was delivered in participants’ contexts, and the funding for AT systems available. Questions included multiple choice

responses as well as free text boxes. Some of the multiple-choice options allowed multiple selections depending on the context of the question.

Results

One participant's data was excluded prior to analysis, as they did not have a relevant job role and working context. The analysis of responses to the first section of the survey was conducted both for the entire group (*n* = 36) and for the subset of participants who also took part in focus groups (*n* = 22). This approach enabled comparisons across the full dataset and the subset to explore potential similarities and differences.

Roles and Working Contexts

Results from the first section of the survey asked participants to provide their location based on DfE region (Table 1), the type of organisation in which they worked (Table 2), their role (Table 3) and career stage (Table 4).

The majority of participants are drawn from the North-West region, it is not clear as to why this was the case as the invitation to participate was sent to people based in schools and colleges across the regions.

Table 1: Participants' reported DfE Region

Region	All Participants	Focus Group
North-East	1 (3%)	1 (5%)
North-West	19 (53%)	14 (64%)
Yorkshire and the Humber	2 (6%)	0 (0%)
West Midlands	3 (8%)	1 (5%)
East Midlands	0 (0%)	0 (0%)
East of England	1 (3%)	1 (5%)
South-East	5 (14%)	2 (9%)
South-West	3 (8%)	2 (9%)
London	2 (6%)	1 (5%)

Table 2: Participants' reported organisation type

Organisation type	All Participants	Focus Group
Special School (all-age, 4-18)	10 (28%)	6 (27%)
Special School (primary, 4-11)	8 (22%)	3 (14%)
Special School (secondary, 11-18)	10 (28%)	7 (32%)
Specialist College (SPI, specialist post 16 institution)	14 (39%)	9 (41%)
Both school and college provision	4 (11%)	4 (18%)

Table 3: Participants' reported roles

Reported roles	All Participants	Focus Group
Special Educational Needs Coordinator (SENCo) or senior leader with responsibility for SEND	9 (25%)	5 (23%)
Classroom Teacher	10 (28%)	7 (32%)
Class-based support staff inclusive of Learning and Care Support or Teaching Assistant	5 (14%)	2 (9%)
Any therapist, employed by the school or through joint arrangements with local NHS providers who engage in the assessment, provisioning and ongoing support of AT	2 (6%)	0 (0%)
Any AT specialist who supports assessment, provisioning and ongoing support of AT	7 (19%)	7 (32%)
Any other technical staff (IT, communication or AT) who support or provide assessment, provisioning and ongoing support of AT	3 (8%)	1 (5%)

Table 4: Participants' reported career stage

Reported career stage	All Participants	Focus Group
Newly started in role / newly qualified (under 1 year post-qualification).	2 (6%)	1 (5%)
1-5 years post-qualification	4 (11%)	2 (9%)
>5 years post-qualification	30 (83%)	19 (86%)

SENCOs or senior leaders responsible for SEND are well represented in the focus group sample, as are classroom teachers. Class based support staff are represented, although in lower numbers than most other roles. Notably therapists are not represented in the focus group data although the “AT Specialist” title, which can be held by a range of professionals, is well represented.

Career stage data is similar across all participants and focus group participants. The majority of participants were five years post qualification; this is not unexpected given the purposive sampling approach and the targeting of “AT mature” organisations.

Although the sample size is too small to allow statistical analysis, side-by-side comparison of the full dataset and the subset of participants taking part in the focus group shows a broad similarity, indicating that focus group participants are likely a representation of the full survey dataset in terms of DfE region, type of organisation, participant role and career stage.

AT Support and Training

Given the broad similarity between the whole group and the subset of focus group participants, the remainder of the results are presented only for those who progressed to the focus group study (n = 22) and can therefore be considered as demographic data for focus group participants. Given that the purpose of the survey data is to understand the context of focus group participants, only survey data relating to the focus group participants is presented in detail. The second section of the survey asked participants for information on where they currently accessed AT training and support (Table 5) and where they had previously accessed such training (Table 6). Questions in this section did not require a mandatory response, and all included a fixed choice list from which participants could choose all applicable responses, and a subsequent free-text option for providing details to the research team.

Table 5: Reported sources of current AT training

Source of AT training	Responses (*n* = 19)
Academic Institution	9
AT Supplier / Vendor	13
Sector Support Body	10
In-house / Inset training	10
Other	7

Table 6: Reported sources of previous AT training

Source of previous AT training	Responses (*n* = 21)
Formal academic level training	12
Formal CPD level training	10
Supplier / Vendor led training	10
Other informal training	8

Free-text responses to the questions about both current and previous training identified a range of specific sources including Ace Centre, Natspec TechAbility, various different suppliers and one academic institution – the University of Dundee. It is acknowledged that the organisations that members of the research team are employed by offer AT training courses, indeed the University of Dundee provides the only Masters level programme in digital AT. This point is explored further in the Project Partners section in the introduction of this report. Participants were then asked where they went to get support with AT, with responses summarised in Table 7. Free-text responses named similar sources for support to those identified as providing training.

Table 7: Reported sources of AT support

Source of AT support	Responses (*n* = 22)
Support body	11
AT suppliers	10
Other staff in my organisation	13
Online community or resource	11
Other	2

Participants were asked how they found out about new AT products, with multiple responses permitted. The most frequent response was personal research (17), closely followed by AT Suppliers (16) and the AT Community (16), including online forums, mail-lists and individual contacts. Sector support bodies were selected by seven participants, and three identified other sources for finding out about new AT. In the free-text responses, participants named a range of AT suppliers/vendors alongside some of the organisations already listed as providing AT training. Other free-text responses identified colleagues, personal research, conference attendance, Jisc mailing lists and social media groups.

The next question in this section asked whether participants felt their level of AT skills and knowledge were sufficient to meet the needs of their pupils or students. Thirteen participants (59%) responded that they felt their skills were sufficient for this purpose. Given the purposive sample sought to gain the views of staff members working in 'AT mature' special schools and specialist colleges, the percentage reporting that they had sufficient AT skills and knowledge to meet the needs of their pupils or students is noted to be lower than expected. It is possible that this number may be lower across all special schools and specialist colleges, and this may be helpful to explore in future work.

This section concluded with two questions about potential future training. The first of these asked which areas of AT participants would want to know more about, or which would be interesting areas for future training. A range of free-text responses were provided, focused in the main on increasing participants' knowledge of available AT products. Twenty participants answered the final question on what AT training they planned to undertake next. Two identified that they could not be released for training due to staffing levels and workload. Four mentioned academic courses. Internal training or CPD opportunities were identified eight times, with three instances of external CPD opportunities including conferences identified. AT supplier or vendor training was not mentioned in the responses to this question.

AT Assessment and Delivery

The third and final section of the survey explored how AT assessment was delivered in each participant's context. Questions in this section identified that the majority of participants (55%) worked in local authority provision, with nearly a quarter (23%) working in third sector organisations. Most of the organisations represented by participants (64%) supported learners with a broad range of disabilities, (where provision was identified as "pan-disability") although there was representation from across the range of SEND provision. Participants were predominantly working with learners at early curriculum levels (P-levels and entry level) with representation across the key stages and into further education, and all age ranges and key stages represented in this group. A wide range of pupil numbers were reported (24 – 700). Of particular interest was the number of AT users. Whilst eight participants reported being unsure of the number of AT users in their organisation, nine participants worked in organisations supporting fifty or more AT users. Taken together, these results indicate that participants in this study cover most types of SEND schools and colleges, with a spread of different numbers and types of AT users. Despite this broad representation, subsequent questions revealed that half of participants reported no staff in their organisations had undertaken formal, accredited or certified AT training.

Participants were asked to provide information on the AT staffing in their school or college, and whether they had a member of staff or team with a defined or dedicated AT responsibility (Table 8). This question was accompanied by a free-text box, where participants reported AT in their context is variously provided by therapists (*n* = 11) and education staff (*n* = 11). One participant identified having an AT team consisting of six staff members, five of whom are student facing and the other is an administrator. This was the only reported instance of a team of this size and structure.

Table 8: AT roles or teams reported in participants' contexts

AT role	Responses (*n* = 22)
Part of someone's role	7 (32%)
Dedicated AT / AAC role	8 (36%)
Share access to a dedicated role	0 (0%)
Dedicated AT / AAC team	4 (18%)
No dedicated AT / AAC staff and no formal role allocation	3 (14%)

Around half of participants (*n* = 12) reported that their organisations undertook assessment for AT. Of these participants, all reported that their organisations carried out baseline or initial assessments and reassessments on an ongoing basis. Half of the group that reported undertaking assessment, (*n* = 6) stated that their organisations conducted pre-entry assessments. Further analysis of this group revealed that the majority (*n* = 5, 83%) worked in specialist college provision. This is perhaps unsurprising, as specialist colleges invest time in pre-entry assessment in order to identify the needs of their students, and to calculate expected support requirements for fee purposes, ahead of them commencing their placement. Just over half of participants, again, in the group that reported that their organisation undertook AT assessment, (*n* = 8) reported involvement with transition assessments. Participants reported conducting assessments in collaboration with other staff in their own organisations and with staff in partner organisations. Again, free-text responses identified undertaking assessment with the support of therapists (SLTs, OTs), and making referrals either to specialist AT centres or to AT suppliers.

Regarding the availability of AT equipment, the majority of participants who carried out assessment (*n* = 10) reported that their organisation had an AT assessment kit. Of these, only six reported there was a dedicated budget for its renewal or updating. Of those who had no budget allocated to this, the most commonly reported reason was insufficient budgets more generally, or that budgets for this task were not prioritised by senior leaders, although other reasons such as lack of space and insufficient staff assessment skills were also reported. Participants were asked to give their opinion about the greatest AT equipment need in their organisation. Of the 21 responses to this question, the most frequently reported needs were modern IT hardware (*n* = 6) and specialist computer access equipment including switches, alternative keyboards, pointing devices and eye-gaze (*n* = 6). Other AT identified included environmental control technology (n = 2) and AAC devices (n = 2). Age-appropriate software was considered the greatest need by one participant and the remaining six participants reflected a general need for a wide range of equipment and software to support the wide range of students or pupils with whom they worked.

Half of the participant group (*n* = 11) reported that their organisation supplied AT equipment and software. This equipment was reported to be funded through local authority funding (when specified in an EHCP), charitable support and contributions from fees.

Discussion

The survey data was gathered from participants representing most DfE regions (with 8 out of the 9 DfE regions represented), albeit with a low overall response rate. Similarly,

all targeted job roles, educational contexts and career stages were represented, although the small number of responses makes subgroup analysis inappropriate.

It is interesting that only 59% of focus group participants responding to the survey felt they had the skills and competencies needed to support their learners with AT. Whilst this represents a small majority within the group, there is still a large group of participants who do not feel this is the case, even though the majority of the group were at least five years into their working career. It is also important to note that due to the purposive sampling method inviting staff members working in “AT mature” schools and colleges, the figure in the wider population may be even lower. Acknowledging that this question measures self-efficacy rather than specific skills and competence, it is interesting to interpret in the context of the literature review, where low confidence in using AT often resulted from a lack of adequate training. This finding is to some extent supported by the reports from participants that they are mainly self-sourcing their training, often from AT suppliers and manufacturers.

The questions around AT assessment also provided some insight into the experiences of the purposive sample of professionals working in “AT mature” specialist schools and colleges. Given the purposive sample sought to gain the expert views of staff members working in AT mature contexts it is again a little surprising that only a small majority of participants reported that their centres carried out any form of assessment, with baseline and initial assessment being the most frequently reported types. This does leave a large proportion reporting they do not internally carry out assessment, which is again a surprising finding, given the expert sample. Participants who did carry out assessments generally reported doing so in collaboration with other professionals, which underlines the prevalence of multi-disciplinary and multi-agency working.

The majority of survey participants reported having access to an AT assessment kit of some form. However, over half of respondents reported that there was no allocated budget for its maintenance and renewal. This aligns with the literature review findings, where several studies identified budgetary constraints and, in particular, budgets for equipment for assessment and staff training being deprioritised. Undertaking high quality AT assessment requires an assessment kit of appropriate hardware and software, which should be renewed to ensure that learners needs can be met by the latest equipment available, and that staff are not carrying out assessments with equipment that may no longer be available on the market. The reported need for modern IT hardware as part of assessment kits is further evidence of this requirement.

Focus Groups

Introduction

The focus groups were undertaken online using a set of structured questions designed to identify the skills and knowledge needed to undertake the AT implementation pathway (assessment, provisioning, ongoing support and review). Nine focus groups were conducted in April and May 2024, with a total of 22 participants attending (Table 9). The groups ranged in size from one to four participants. In the single session with one participant it was run as a structured interview, using the same questions as used in the other groups.

Participants

Table 9: Focus Group Participants

ID#	Role	Type of Org
P1	AT specialist	Specialist College
P2	Senior Leader	Specialist College
P3	Senior Leader	Specialist College
P4	Classroom Teacher	Specialist College
P5	Senior Leader	Specialist College
P6	AT Specialist	Specialist College
P7	Senior Leader	Special School (secondary, 11-18)
P8	Classroom Teacher	Both school and college provision
P9	AT Specialist	Both school and college provision
P10	AT Specialist	Special School (secondary, 11-18)
P11	AT Specialist	Both school and college provision
P12	AT Specialist	Special School (all-age, 4-18)
P13	Senior Leader	Special School (all-age, 4-18)
P14	AT Specialist	Special School (all-age, 4-18)
P15	Teaching Assistant	Special School (secondary, 11-18)
P16	Classroom Teacher	Special School (secondary, 11-18)
P17	Classroom Teacher	Special School (all-age, 4-18)
P18	AT Specialist	Specialist College
P19	AT Specialist	Specialist College
P20	Teaching Assistant	Special School (primary, 4-11)
P21	Classroom Teacher	Special School (all-age, 4-18)
P22	Classroom Teacher	Special School (all-age, 4-18)

The focus group participants were respondents to the survey stage of this study who had agreed to participate in this next phase of the research. The survey results provide an overview of focus group attendees.

Materials and Methods

Each focus group included a maximum of 4 participants. On one occasion where only a single participant could attend a session, this was conducted as an interview, following the same structure. Three of the focus groups were attended by specialist college staff (*n* = 8), six of the focus group sessions consisted of special school staff (*n* = 14). The sessions were hosted using *Microsoft Teams* and were chaired by a member of the research team with another member present to provide support and take notes. All focus groups followed the same structure with the following prompt questions presented to participants verbally and on screen:

1. What skills do you think are needed to undertake AT assessment (for the cohort of students/pupils that you work with in your context)?

2. If you undertake assessment, do you document AT assessments and use the information to provide information, training or resources?

    a. If Yes:

        i. Please tell us about any information or training resources provided to colleagues, parents, family members or other supporters of the AT user.

        ii. Useful transition information such as a communication or AT passport that can be used when transitioning stages or organisations.

    b. If you don't undertake assessment, do you or your organisation make referrals, internally or externally, if so to where?

3. Do you undertake ongoing support for AT?

    a. If yes, what support do you provide?

    b. What skills do you think are needed to provide AT support (for the people you support)?

    c. What skills do you think are needed to monitor effective AT use (for the people you work with)?

    d. What skills and knowledge are needed to effectively support pupils to develop digital life skills, including use of assistive and accessible technology?

4. Is there anything else you would like to tell us about your (or your colleagues') AT training or development requirements that has not already been covered?

Analysis

Automated transcripts were generated and then reviewed and corrected by a member of the research team. The focus group transcripts were analysed using content analysis[15] with a member of the research team developing preliminary codes and sub-codes from two randomly selected transcripts. Alignment between coding and source transcripts was checked by another member of the research team, with 85% agreement. The codebook was revised through discussion within the team, resulting in full agreement after revisions.

The revised codebook was then used by a member of the research team to code the remaining transcripts and to count the instances of each code and sub-code. A final review of the codebook was undertaken by both authors to identify frequently co-occurring codes and to combine codes as required. Due to the high level of consensus within the team further coding was not required.

Results

The Code Book produced from the content analysis is included in Annex B. The following sections present a narrative analysis and descriptive interpretation of the findings, using the main codes as a structure to present the findings. Direct quotes from participants have been included to support and illustrate each point. Quotes are attributed to participants using their participant (P) number, their role and their working context: Specialist College (Col) or Special School (Sch). Where required, quotes have been edited to ensure the anonymity of participants and their working contexts, and to increase readability.

Skills and Knowledge Required to Support AT Assessment

The skills and knowledge that focus group participants felt were required for successful AT support were discussed frequently across all groups. This code included four skills sub-codes,16 knowledge sub-codes and three attribute sub-codes, covering explicit descriptions of skills and knowledge, as well as general attributes needed by staff working in AT roles.

Participants seemed to frame these as either “soft” or “hard” skills, with the hard skills related to AT including codes that related to specific, learnable knowledge about devices, strategies and systems. Knowledge of available AT was the most frequently mentioned of these codes across both school and college groups, suggesting that this was considered

[15] Silverman, D. (2015) *Interpreting Qualitative Data*. Fifth Edition. Los Angeles: SAGE.

crucial for the delivery of AT roles. Some participants positioned this as “foundational knowledge” for such roles.

> Having the knowledge in the background is key because if you haven't got that, you don't know what you can provide in terms of that tech for the learner then. - **P3, Senior Leader, Col**

AAC tools and systems

Several participants identified areas of particularly specialist expertise, such as having a knowledge of AAC tools, seating, positioning and mounting equipment and specialist computer access. Other areas of specific AT knowledge mentioned by participants were low-tech AT and mainstream accessibility affordances.

> I come from [a context for people with profound and multiple learning disabilities]. I know from my own experience one of the problems I have is the more mainstream type of software is just not something I've ever used. And as I'm getting more aware of that, I'm like “Actually that would have helped that student if I'd been aware of it. I'd have thought of it when we assessed.” But because [the software] is not something I knew, I didn't know what I was assessing for, necessarily. You don't have to know how we all work, but knowing what options are out there allows you to think “Actually they might need that, someone needs to research it”. - **P9, AT Specialist, Sch**

Developing and maintaining knowledge of AT systems and tools was reported to sometimes be challenging, as participants suggested researching new and developing AT systems and interventions was important but highlighted that there was not always time in their schedules to do this, leaving them to do this research outside their working hours.

> I try and keep myself abreast of what's available and […] when people go “I've never heard of that, what is that?” I've found that the reason that I know about it is because I've actively sought out what it is, and a huge part of that is social media, and all of the time that I spend doing that is not paid time. That's in my own time, you know, when you're scrolling on social media at seven o'clock at night in your pyjamas, on your sofa, and you see something that you think would work for your young people. **- P7, Senior Leader, Sch**

One participant, an AT Specialist, highlighted that there is specific knowledge that may underpin even these basic AT skills, specifically a knowledge of basic technology and IT infrastructure.

> The infrastructure that you're in, and the infrastructure that you have to undertake the assessments to begin with. So, you've got basic kit, I mean like a computer or

> software or a system, [you need] a basic understanding of *that* system so you understand how it works. - **P14, AT Specialist, Sch**

Learner needs

Turning attention from knowledge of the technology to knowledge about the learners needs, a subset of codes related to specific aspects of disability or additional needs were noted across the focus groups, suggesting that participants feel a knowledge of disability and how this might impact a learner is important. These included sensory needs, with both vision and hearing mentioned, mobility, and motor or physical needs.

> In a specialist college setting, I think the skill set is quite wide for somebody undertaking an [AT] assessment. For example, in the college I work in, it's really helpful if whoever's doing the assessment is aware of types of visual impairment and how that might affect a person's ability to interact with their environment and with computers and with other people, and similarly their hearing impairment and mobility, and how that can affect how they interact with their environment. - **P5, Senior Leader, Col**

> I think the skills that are needed by the person who's undertaking the assessments [are] a good understanding of the disability of the person who is being assessed, [what] the expected outcomes for that person's physical ability would be. For example, in my school we've got a very wide range of physical disabilities and the expectation of somebody who maybe has cerebral palsy, that affects the hand that we're trying to work with versus muscular dystrophy and the loss of skills is important to know. How to pitch things and not overwhelm somebody. It's good to have high expectations. It's very, very useful to have high expectations and always expect that someone will be able to use the piece of equipment but also being mindful and respectful of the fact that not everyone will be able to do everything that we anticipate they might be able to. - **P7, Senior Leader, Sch**

Translating this general knowledge of disability into a personal approach tailored to the individual learner is something that participants reported as important, emphasising the need to have knowledge of the specific AT user and their history. This was often presented not as a record keeping exercise, but as a process of constructing a picture of the individual through the reports of those closest to them:

> Just being able to listen and seek that kind of information from all angles, like from the Physiotherapist, from the Occupational Therapist, from the Speech and Language Therapist, Teacher, parents or everybody involved around and obviously the pupil himself. - **P21, Classroom Teacher, Sch**

This gathering of information is consistent with the idea of a person-centred approach to AT provision, which several participants specifically mentioned. This approach takes into

account the specific abilities and limitations of a learner's disability alongside their own strengths, goals and preferences.

> You need to understand […] what the child needs so you make it person centred, so you're not going with a really, really high-tech thing that actually is going to be useless because it's too advanced for that pupil. It's really important in my setting. We go "Right. Who is it? What curriculum are we in? Where's their final goal? What do we need to help them get there?" - **P12, AT Specialist, Sch**

Wider environment

Knowledge of the user's wider environment was less frequently discussed. The need to set the user's goals against goals that may be, for example, dictated by the curriculum or learning programme was also discussed in one focus group:

> As educators, we need to have a pedagogical understanding of what [...] the students are going to be trying to do and have knowledge and understanding of the content of both of the subject that the students are working on and also the […] content of assistive technology. - **P22, Classroom Teacher, Sch**

Methods by which such information could be obtained were not widely discussed in the groups, although the importance of observation skills was mentioned as a desirable component of the AT skillset. Similarly, being able to engage with learners to fully understand their needs and goals was positioned as an important part of AT assessment:

> You need quite good observation skills in terms of being able to see [muscle] tone, comfort, posture, that kind of thing. [You] need to be able to listen to what the person wants to be able to do. And you need quite a lot of empathy as well in terms of tapping into that motivation, listening to what's difficult. And then to provide sensitive solutions that work for them. **P1, AT specialist, Col**

Structuring background information, goals and other relevant information was reported as important to the assessment process, and several participants discussed the importance of a structured AT assessment methodology such as SETT (Student, Environment, Tasks and Tools)[16] or HAAT (Human Activity Assistive Technology)[17]. Participants discussed the importance of such tools as a way to structure assessment information and break down assessment tasks.

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[16] Zabala, J.S. (2020) 'The SETT Framework: A Model for Selection and Use of Assistive Technology Tools and More', in D. Chambers (ed.) *Assistive Technology to Support Inclusive Education*. UK: Bingley: Emerald (International Perspectives on Inclusive Education), pp. 17–36.

[17] Cook, A.M., Polgar, J.M. and Encarnação, P. (2020) *Assistive Technologies: Principles & Practice*. 5th edition. St Louis, Missouri: Elsevier.

> I think you need to have knowledge of an assessment model as well. So, if using HAAT or the SETT model, you can break it down into specific areas [like] what the task is going to be and what the assistive technology will be to complete that task. So, I think you need to have that knowledge. - **P19, AT Specialist, CoI**

Understanding assessment approaches

This standardisation of assessment approaches aligns with one of Edyburn's five primary recommendations: the need to standardise AT evaluation procedures and protocols. The need for this is evidenced by a number of participants reporting that their context did not have a structured way of gathering or collating assessment information. Elsewhere, participants highlighted the risks of not carrying out assessment, or not carrying out individualised assessment, which they felt could result in a generic prescription model which did not recognise the needs of individual learners:

> Quite often there might be situation when we're using assistive technology, like switches or other equipment or games or… but no one knows. Basically no one has any training, and the children don't necessarily go through the assessment. So quite often you'll go in PMLD classes, for example, with children with physical impairments. And they all have the same switch, for example. - **P21, Classroom Teacher, Sch**

The skills needed to undertake high quality AT assessment were not limited to knowledge of specific fields, devices and frameworks. Participants cited a range of "soft skills" or personal attributes that they considered important. Interpersonal skills, in particular listening skills were seen as central to the person-centred approach, and to the process of gathering information to support an assessment:

> I feel like you need to be a people person. So, before any of that assessment could take place, you need to be able to establish and build a relationship with that specific learner or student - **P19, AT Specialist, CoI**

A participant highlighted the importance of these interpersonal skills in developing professional relationships with other disciplines and professions involved in AT:

> I think interpersonal skills are really important, aren't they? You want to have that transdisciplinary team approach, so you've got to be able to talk to the SLT and you've got to be able to talk to the Class Teacher and the and the Support Staff and everybody around that that student to be able to get the best out of any piece of assistive technology that you might recommend. - **P5, Senior Leader, CoI**

Fostering a team approach was positioned by one participant as being dependent on knowledge and awareness of role boundaries and different professionals' scope of practice:

> It's also on the disciplinary knowledge of knowing where AT sits. Here, between Occupational Therapy and SLT, particularly in our admission system. That's always important, to see how we are going to work together. So having that inter-team knowledge on those areas, particularly when looking at switch and switching or at communication with AAC. **P18, AT Specialist, CoI**

One participant felt that successful AT implementation was hard without an enthusiasm for the field:

> Basically, share the love, share the love of AT amongst the staff and share the enthusiasm and passion amongst the staff so you give them the passion that you have, and it makes them want to use that piece of technology with that student even more. - **P14, AT Specialist, Sch**

Documenting AT Assessment

As reported in the survey data, about half of participants were involved in assessment for AT within their context. In the focus group, the documentation of assessment findings was a common discussion point, with only a few participants reporting that they carried out assessment that went undocumented (4 participants). Participants in the study reported a variety of different methods used to document, retain and communicate assessment information, noting that different recipients may have different requirements from this:

> Yes, they're using this bit of kit for a keyboard, they're using this bit for a mouse […] so that makes quite a nice kind of prescription in a way. All of our students have electronic care records, so we record it on there, but then that can be exported […] that goes with the student's leavers report, […] it can be sent home and things. It's not great in terms of format and recommendations, we always make sure we have a photo on there as well as [technical details and names of devices]. Which is probably sometimes a bit more helpful than all the words, especially if you're talking to people who don't [know much about AT]. It doesn't matter if I know it's a Traxsys joystick, does it, if you just need to know what it looks like so you can use it with someone. - **P1, AT specialist, CoI**

The use of an MIS system was mentioned twice as a way of communicating assessment results within the staff group. Participants discussed the different stakeholders with whom assessment findings and AT details were shared, including Class Teachers, Learning Support staff, parents and therapists. The comparatively brief discussion of sharing assessment findings with Therapists may seem surprising as the majority of participants reported working with learners who have more complex disabilities, and it would seem more likely that therapy staff (SLTs and OTs) would be involved in such cases. This may be reflective of some participants not having sufficient access to these professional

groups. Interestingly, only one mention was made of sharing this information with the AT user themselves.

Communicating assessment findings was discussed in several focus groups. The idea of an AT or Communication Passport was the most commonly identified method of sharing such information. Participants also discussed that the assessment findings were often translated into bespoke training requirements, either bespoke to the learner or to the device they were using. Some participants reported making how-to guides or videos to communicate their assessment findings to colleagues and others involved in AT support such as parents.

Referrals to Other Services

Participants discussed that an important area of knowledge around AT implementation was understanding when and how to make referrals to both local and regional / specialist colleagues. This speaks to an understanding of the multidisciplinary and multi-agency nature of AT implementation, and an awareness that external agencies are part of the ecosystem of support for AT users. In particular, participants discussed referral to SLT or regional NHS Specialist AAC services, other therapists including SLTs and OTs, AT suppliers, wheelchair services and private or charitable services. The predominance of discussion around AAC referrals can be interpreted in light of the contexts in which participants work, and the well-developed regional pathways for AAC, which are less well developed in other areas of AT.

Ongoing AT Support

Discussion across all focus groups referenced the importance of ongoing support, both for AT users, their systems or devices and other members of staff working with learners. Often this discussion was general and referenced the importance of supporting users at all stages of their AT journey.

Importance of communication

Consistent ongoing support for learners was framed by some participants as being a good way to identify opportunities to expand or increase AT use. Seeing how devices were currently used, as well as identifying motivating activities for learners was identified by one participant as being a useful outcome of providing ongoing support. The following example highlights these factors, as well as the importance of collaboration between AT professionals and educators to integrate AT targets into the taught curriculum:

> I'm lucky enough to be able to take children for one-to-one sessions with their Learning Support Assistant. And we have group communication sessions […] We play Robot Wars sometimes with environmental controls. I can provide ongoing

> support for the students to use the assistive technology they have already been given. And I work very closely with the class teacher with their learning targets for their EHCP outcomes. So, we pick up on any assistive technology ones or any sorts of technology outcomes. Whatever it is, communication, environmental controls, computing. So, I'll work closely with the class teacher and help provide strategies and lessons and lesson ideas for those teachers. - **P14, AT Specialist, Sch**

Support for learners using AT was related by some participants to the core principle of having and maintaining high aspirations for what AT users can achieve, which was positioned by some as being a core attribute for staff working in specialist schools and colleges. Having patience when training or working with both staff and learners was also a point of discussion in several focus groups. Participants discussed that this was an important personal attribute for those working with AT.

Whilst most discussion focused on a general need to support AT users, there were specific areas where support was highlighted as being crucial. In particular the need for communication support from SaLT colleagues was a feature of some discussions:

> In terms of communication, I think our support is really strong. So, our Speech Therapist models and has a programme with [learners] in order to use it [AT or AAC] functionally. - **P2, Senior Leader, Col**

Types of ongoing support provided

Similarly, support for alternative access methods was a specific area of discussion, although it was interesting to note that the use of switches and switching were the only concrete case examples provided by the group. This discussion generally overlapped with discussions of the use of AT for communication. One participant highlighted the need for staff in their context to learn more about this topic, potentially highlighting it as an area with its own specific skill requirement:

> I would say that we're not as strong [with switch users], but I think that's more because we're just really developing our AT offer. We're certainly not as advanced as maybe others. So, communication has been a big strong focus but we're working there with switches and things like that, which I know is basic for some people. But for us it's kind of new. Yeah so, we introduced it a little bit at a time really. - **P1, AT specialist, Col**

At the other end of the spectrum, participants highlighted the benefit of a skilled and experienced AT workforce in providing targeted support to learners. In the following example, the participant discusses the value to a Senior Leader of a more experienced teacher in supporting the development of an AT user's skills:

> I suppose we meet with the teachers every term to go through the targets that we're working on to see if we need to move. You know, if that learner [is on a switch skills programme] do we need to move along the switch skill ladder or do we need to give them more software? [This sort of discussion informs] the EHCP outcomes. But I don't think that we necessarily formally meet [teachers] once a week or twice a week or something like that to offer support - **P7, Senior Leader, Sch**

There was an awareness across several focus groups, in particular those including Specialist College staff, that support for AT did not end at the school gates. Extending AT support into the home environment was seen as crucial for both engagement and skill development, and this was frequently allied to the idea of using mainstream accessibility affordances or mainstream devices. Supporting these at home and in school or college was framed as promoting family "buy-in" for AT:

> I've shown them how to do it at home, where [my learners are] all using voice typing now. And screen readers because they really struggle to read. They've got lots of different visual [impairments], but academically they're quite able. So, we work with them to work out what is the best tech for them and then show them how to use it on all their devices. So, because they're teenagers, they bring their phones into school, it's quite useful because then you can help them put [accessibility software or features] onto their phones. And then they've got it at home and […], if we can do it in school, we'll do it in school. - **P12, AT Specialist, Sch**

Although there was general agreement that providing support across home and school was considered good practice, there was an acknowledgement that this is often not part of the standard support package. Participants reported feeling conflicted about this, recognising the value of at-home support but not having agreed time to provide this.

Scaling of AT support

Within the domain of AT support, several participants identified that ongoing support could also offer opportunities to identify review points for learners using AT. This was not limited to scheduled or regular support sessions, however, with several participants describing serendipitous occurrences where a call for support, or even device maintenance, resulted in identifying a need for review.

> If you've got somebody who's […] already got tech, we provide ongoing support with that, so [teachers] might be able to ring me saying "Can you come and have a look at this?" But once we've done the referral, we will train them, and we will check after a month, after two months and then it gets a little bit longer… It's just […] assessing the students as well […] And then there's a lot of ad hoc stuff that

> comes through. So, we follow up on the ones we've already assessed that are “in the system” if you like. And then there's always other ones. You have a class who wants to do something so, […] it's training, it's advice, it's tweaking it, it's moving on to the next level. It's tech support, you know, a sort of mixture of everything basically. - **P17, Classroom Teacher, Sch**

The idea of identifying and carrying out review was often aligned by participants with the opportunity to “scale” AT use – finding new options for users to practice and improve their skills, or new activities to which the AT could be applied. The code for this scaling overlapped with all types of support, including support for communication, environmental control, access methods and maintenance calls. This would indicate the value of support as a tool for both the learner and the AT support team across a range of use cases.

Regarding on demand maintenance in particular, the opportunity for experienced staff to use maintenance calls as a way to not just fix problems but identify opportunities was reported by one participant using a recent case example:

> So once [AT] is in place, it'll be things like maintenance, ad hoc, if something's gone wrong, hasn't been connected properly, or that type of thing. But then also continuing [maintenance]. Just as an example of something I've done this week: the student’s been given a new communication aid and wanted to learn how to use YouTube with it so, I set up the accessible version of YouTube. And then that will be ongoing, we'll sort of gradually add new search terms, new things for them to search for on YouTube so they can continue to access content the way they want to. And then, going forward, they want to be able to access things like Alexa. […] So, it will be sort of gradually adding new functions as we go. - **P4, Classroom Teacher, Col**

Overcoming barriers to providing AT support

Despite there being general agreement amongst participants that ongoing support was a vital part of successful AT Implementation, several barriers were identified. Amount and type of support was felt by many to be highly variable in their contexts, often related to the complexity of the learners, with those with more complex disabilities often perceived as disadvantaged in terms of the amount of support they receive.

> Our complex needs classes are woefully under resourced for [AT support] and we've got, I think, good AAC provision. But assistive technology, particularly for those complex needs classes, is very poorly provided at the moment. I get to spend about half an hour a week supporting in one of those classes. And I'm targeting particularly students that I'm working with the speech and language therapist on, so it's working on communication work with one or two targeted children. Because of the small amount of time, we have available, we've had to

> just focus. But I'm aware that there's greater need in those settings. - **P22, Classroom Teacher, Sch**

Time pressures

As in this example, staff being “time poor” was frequently cited as a barrier to support, but also to other areas such as training. Participants reported that staff in their settings were often too busy to see all children, and certainly too busy to be able to dedicate time to training and development.

One study included in the literature review (Ajuwon *et al.*, 2016) highlighted a problem that seemed to recur in the focus group sessions during this project: staff feel aware of the knowledge and skills that they need to develop but lack either access or time for the training to develop these. This was particularly evident in the amount of discussion dedicated to the skills needed for ongoing support of AT.

Lack of training on IT

By far the most common of these was staff needing general competence in using technology or IT equipment themselves before they can be expected to support learners in this task.

Participants noted that basic IT skills were often a barrier in schools and colleges, and that this led to difficulties with troubleshooting for both IT and AT systems.

> The technical side [is very important] because the biggest issues we get is “I can't get this to do this” or “It started doing this”, “The menu's done this”, “It's not working.” It's simple things sometimes, but the technical side, the technical aspect when they're using it, that's the biggest [barrier] because if it doesn't work, [staff] just go “Right, this is just a waste of time”, and they just don't do it. [AT] just ends up stuck on the shelves on the side. - **P17, Classroom Teacher, Sch**

Participants underlined the importance of these skills with an understanding that basic technology competence can be related to confidence in using IT and / or AT. Again, this relationship reflects the findings of the literature review, which draws strong links between training, competence and the confidence to implement new ideas and tackle problems: confidence with AT correlates to a better understanding of its value and increased use.

> I think there’s the knowledge and then obviously being able to instil that confidence in someone else as well. So that knowledge of what the equipment can do and how it's used, and debunking any myths, making sure that people feel, even those who are not that IT literate, are actually able to feel confident in using IT. - **P13, Senior Leader, Sch**

Whilst confidence with basic IT or AT was considered important, some participants reported that increasing levels of confidence led to staff being more proactive in adding new features that extend the use of existing AT tools and, by extension, increase the options for users:

> You still need to have the skills with the technology. It's understanding how to use it, but then you also need to have a deeper understanding of the functionality. You need to understand the potential that the technology has. And you need to know how and when it's appropriate to add the new functions. You need to have the skills to be able to understand when is the right time to bring in these new functions. - **P4, Classroom Teacher, CoI**

One participant, an AT specialist, highlighted how they were frequently pulled away from other tasks to support staff in solving basic IT problems, which resulted in their not being able to give time to tasks that required their specific expertise:

> I think you've still got to be reasonably competent at ICT, I think your staff have to have reasonably competent skills and you have to have somebody who's going to maintain it, fix it if it's broken. At the minute, [if staff need support], they'll be going "Oh [AT specialist] is in a lesson. We'd have to go and get him. He's brilliant. He'll run around. He'll help." It's that, that's the barrier. - **P10, AT Specialist, Sch**

It is reasonable to infer from comments like this that ensuring staff in specialist schools and colleges have solid basic IT training and computer literacy would result in a better overall standard of support, as well as freeing up expert resources to be targeted where they are most needed.

Barriers to training

The need for training in both IT and AT was a frequent topic of conversation in the focus groups, although this was often framed in terms of the barriers experienced by staff receiving training.

> For me it's different because we have such a high turnover of staff. It's a lot of repetitive training for staff on the tech. Depending if it's a new key worker in their class, if it's new staff in general in the department… it can be making sure they've got an overview of all the different tech available in their department or in the college and working with it. - **P18, AT Specialist, CoI**

Barriers to undertaking training and development included time and access, as previously discussed. One solution to this that was proposed was the use of a "train the trainer" model:

> I am qualified to deliver that training to staff and then part of my team is as well. They've done the Level 3 learning support, so I think having that qualification yourself to deliver that training really helps with the amount of support you can give. Having the protocols in place to show staff and physically showing them as well. So, there's time, as well, that you need to support staff. - **P19, AT Specialist, CoI**

Problem solving

Other skills discussed in the context of providing ongoing AT support included general areas such as problem solving and recording of information. The task of setting AT targets was one that some participants felt was crucial to ongoing support, and something that could be developed by staff with practice and training:

> I think the skills you need to know if you're in an education setting, are how [learners] can develop [AT] skills to meet the needs of their RARPA[18] targets or their qualification targets, and how they develop over the years that they're with us? So, it's looking at [staff] having the skills to target set, to know what the next step should be and know what training needs to go with that both for the student and for the staff support in that. - **P5, Senior Leader, CoI**

Monitoring Effective AT Use

Whilst providing ongoing support for AT users is clearly considered crucial to their success and to maximising their potential, focus groups were asked to discuss what skills were needed to monitor AT use, to identify opportunities to increase or change the use of technology. With discussion in earlier parts of the focus group sessions having identified a range of frameworks and approaches for target setting and measuring progress, it was perhaps unsurprising that discussion in this area focused on the need for staff to be aware of needs and opportunities to scale or increase the use of technology for learners. Discussion around this topic focussed on the need for staff working with AT users to be aware of indicators that might prompt a change or a review:

> [Staff] need really clear understanding of what they are looking for. And so, we started off our more in-depth monitoring. [Previously] we just wrote “How was the session?” and [staff] just wrote “good”. That's not actually going to tell us what we actually need. So, you need [to be] really specific. Did [the student] meet this target? - **P12, AT Specialist, Sch**

[18] Recognising and Recording Progress and Achievement of non-accredited learning

Importance of effective communication and observation

Whilst the previous section highlighted the potential of those involved in ongoing support to monitor AT users' progress and identify indicators for review, some focus group participants suggested a structured approach to collating evidence was helpful. Some participants gave examples of frameworks or agreed systems for monitoring progress, documenting and sharing such evidence:

> We'll use the SETT. You have to know the student, what their goals are, in the first place because they might be very different to what a teacher wants to get out of the AT, so it very much depends. The effectiveness [of AT] is very much dependent on the person, so I think it's really important that you able to communicate effectively with the student to ask them whether they think the AT has been effective. To communicate with everybody else, to see if they think it's been effective and good records, like [P6] was saying; the better records you can have, the better you can monitor the effectiveness of AT. - **P5, Senior Leader, CoI**

The need for effective communication skills with both learners and staff was considered by many to be an important part of successful information gathering for review. In one focus group this need for good communication skills was equated with empowering members of staff who might be less confident in speaking up to contribute to monitoring and review.

> Just listening skills. Maybe just take the time to listen to what the student and the class tutor and members of staff, the feedback they're giving you. Sometimes some members of staff may not be that confident with assistive technology or with technology in general, so [be] patient and listen to them. Sometimes they come to me, and they say, "I'm not good with technology [P6], could you show me this?" And I think […] having that good atmosphere at work, [being] willing to come to my office and be honest about it […] I think that's important as well. **- P6, AT Specialist, CoI**

One participant noted that good communication skills with learners may well include knowledge of AAC-mediated interactions and experience in communicating with people with communication needs.

Observational skills for all staff who are involved in AT implementation was considered to be important by several participants.

> The thing with these complex classes [groups] is that the progress is really tiny increments over long periods of time, so it's very difficult for somebody without training to grasp what progress is being made because there's so many variables involved. It's even harder for the staff team, I think, to understand because they're

> in there the whole time and they may not get actual progress because, they've not noticed the increments that have slowly been accruing. You need an outside perspective to say, “Oh, look, that's not what I was seeing two weeks ago, or a month ago, you have moved on there. - **P22, Classroom Teacher, Sch**

Digital Life Skills

Participants across all focus groups discussed the skills and knowledge needed for this important area of AT support.

E-safety and safeguarding

In all focus groups, e-safety and safeguarding were central concerns for participants.

> One of the biggest skills that I need to have at the moment is around e-safety, online safety. I'm giving the students these skills, these apps, these things that they can access and methods of accessing it, but then also making sure that they know how to keep themselves safe […] is a massive part of developing a student's digital life skills. Because especially when you consider that some of the students may not have had free access to the internet before they get this piece of technology, being able to show them how to do it and how to do it safely is huge from my point of view. - **P4, Classroom Teacher, Col**

The subject of digital life skills was often discussed using concrete examples that reflected participants’ own practice. For example, digital banking and fraud awareness was one area where participants highlighted the need to support AT users, ensuring that they understood the dangers of using these systems, such as falling for scams. Participants who worked with older learners described the need to support students with what they see as the complexity of setting up and managing their finances more independently.

Participants in focus groups were aware of the need to balance risks against the opportunities that digital life skills, social media and access to mainstream devices can afford AT users. However, they perceived there to be a barrier around a lack of age-appropriate e-safety training resources:

> It it's difficult though, because a lot of the e-safety stuff out there is aimed very much towards children, so for me one of the things is being able to get those messages across in a more adult manner. - **P4, Classroom Teacher, Col**

Monitoring devices that are used inside and outside of school or college is challenging; therefore, upskilling parents was discussed in several groups.

Participants seemed particularly aware of supporting e-safety in a field that is changing so rapidly, keeping themselves up to date was clearly recognised as being important to better support learners, parents and colleagues.

Accessibility features and other digital skills

The rapid development of accessibility features within mainstream operating systems and software was seen as an important new assistive technology to stay up to date with:

> You need to have good IT skills. You need to know what Microsoft's latest accessibility features are and what can be done on an iPad, that can't be done on an Apple Mac. So yeah, I think IT skills are particularly important when you're thinking about life skills, but I similarly, I think research knowing what's coming out next and what's going to be a student's favourite app to use and how you're going to make that accessible for them is important, so modern culture and keeping up with the kids, if you like, it's important. - **P5, Senior Leader, CoI**

It is clear from participant responses that the accessibility features built into mainstream devices and operating systems and software are being used to support pupils and students, however, successful use appeared to be linked to staff having a level of confidence with mainstream digital devices or computer literacy.

> [Staff] need basic IT skills themselves. They need to understand what digital life skills are […] The world is going digital […] I think they need to have some online safety, some e-safety type safeguarding skills and knowledge to ensure that everybody is as safe as they can be. And to notice when [learners are] potentially not being as safe and know what to do about it. - **P13, Senior Leader, Sch**

In common with other areas, participants recognised the need to proactively teach digital life skills through activities that are motivating for the individual learner, before generalising these skills into other areas:

> That's really important on motivation. The students often have a very specific thing that they really want to be able to do and sometimes teachers will be like “That's not a lesson”. It's like it doesn't actually matter if that's what they want to learn to do. [But] actually, usually you can then use that to work on a lot of other skills. So, I had a student and all he wanted to do was do some accessible gaming, but he was learning to use a joystick, which he can then use for pointer control. And he's now driving an electric [wheelchair], which he wasn't. And there's a thousand other things you can bring into that. Working with what matters to the student rather than trying to pigeonhole it into strictly academic worth. - **P9, AT Specialist, Sch**

AT Training and Development Requirements

A range of AT training and development requirements were identified by participants in the focus groups.

AT training at a range of levels

Reflecting some of the studies in the literature review (Ajuwon, 2016) where participants discussed the feeling that AT training was geared towards people with previous experience, and that basic AT training was lacking, focus group participants consistently highlighted the need for basic AT awareness raising training for all staff.

> Me personally, I think [AT training] should be […] I don't want to say mandatory, but it […] should happen on a regular basis for all staff. At least a basic awareness. It should be made clear when people join an organisation like ours that you will be expected to work with technology. - **P4, Classroom Teacher, CoI**

The lack of AT material in pre-qualification training for teachers was a discussion point in several focus groups. One participant identified that even a language change in an assessment specification could have a significant positive impact in terms of including AT training within teaching qualifications:

> Looking through our most common teaching qualification that our staff have, which is the level 5 teaching and training diploma, and looking through every criteria point of that, there's no specific mention of assistive technology. It says specialist technologies or modern technologies but has no specific mention of assistive technology. So, when that's being taught, especially if it's been taught by a qualification provider that doesn't have a specialism in, or any knowledge of assistive technology that's kind of brushed over with EdTech or IT so there's no preservice training in assistive technology at all. But even the wording could be changed. I think it would help us incorporate preservice AT training for the staff. - **P5, Senior Leader, CoI**

The value of AT specialist roles

Across several focus group sessions, participants discussed the specific role of AT specialists. In particular, these roles were positioned as being a place to go for support and to ask for help with more complex problem solving. As noted previously, the AT specialist can be seen as having a skillset that extends beyond basic IT skills or even basic AT competence, meaning they have a role both in coordinating a centre's AT offer and in supporting more complex learners and equipment. This was seen as valuable by most participants

This idea that staff are able to speak to an AT specialist around problem solving when issues occur means that the AT specialist is then better able to understand common

problems, coordinate responses and undertake review for individual learners if needed. This discussion reflects some of the findings of the literature review (Maich et al., 2017; Slaughter, Waller and Griffiths, 2023) where several sources discussed the importance of such expert roles.

The benefits of these dedicated roles were discussed by some participants, highlighting that they supported an improved AT service to pupils or students and to staff members, notably due to the dedicated time available to focus on AT support.

> It's not necessarily a skill, it's the time. Somebody's dedicated, ringfenced time that everybody knows. No one would ever go for more than a day with a […] piece of equipment that they can't use with a person. They know where to go to, that [someone] will be able to help them. **P7, Senior Leader, Sch**

The benefits of having a dedicated AT role, beyond simply having someone with the skills, knowledge and attributes needed for the four stages of AT implementation, seemed evident to many participants in the study. Principally, the additional time allocated to these roles for developing specific AT skills, researching new solutions for learners or undertaking high-quality assessment were areas where dedicated AT specialist roles added specific value.

The importance of senior leader buy-in around AT was discussed in several focus groups, where both cultural value and resource allocation were considered to be critical to successful AT implementation:

> Understanding from senior leaders, and the importance of it to release those purse strings to buy all the equipment, buy the stuff, maintain it, give [AT Specialists, IT Teams] or whoever the time to do that. **- P13, Senior Leader, Sch**

There seemed to be little doubt across the focus groups about the value of AT specialist roles. However, one senior leader identified that they considered this role to be vital, but that there were pragmatic barriers to implementing it successfully:

> I'm desperately trying to find some way of releasing a member of staff now to do it. […] So, it's about making sure that your senior leadership team see the value in AT. And I know it sounds really daft because you'd think we all would, because obviously we should. We are all about the improvement for our pupils, but without us having the background knowledge, it isn't always that easy. Budgets: that is one of the things that is the biggest area of concern for senior leadership teams when you're trying to keep the lights on. Budgets in schools are challenging. I know how valuable AT is […] for everybody. And I do mean from my most able users with really complex [physical disability] to my PMLD pupils who [need AT to access the world]. I see them in the classrooms, so I am willing to do that, but it is hard when equipment is so expensive. And moving them into adulthood, the

> independence, the short sightedness. You want independent adults, you want successful adults who may be able to achieve greatness, you need to invest in them. - **P13, Senior Leader, Sch**

Another participant was even more blunt about the challenges facing leaders who want to promote AT roles:

> If we've got tight purse strings, the first role that will go will be the AT champions, the AT team. - **P14, AT Specialist, Sch**

Taken together, these discussions underline that if schools and colleges are to make effective use of AT the importance of well-funded AT specialist roles should be recognised by leaders. Whilst this may be understood by some leaders, the available budget may not allow leaders to create such roles. It is acknowledged that there is a cost to having such infrastructure in place to support AT specialists, even when it is agreed that this resource will in turn support other staff and learners to make best use of AT.

Team working

The roles and responsibility of school and college staff (including AT specialists) was a topic of discussion in several focus groups. Participants discussed who had the lead role for AT implementation in their contexts. It was generally acknowledged that, whilst AT specialist roles were important, it was equally important that all staff had a responsibility for AT implementation, rather than it being the prevail of a few specialist roles.

> I think for me the biggest thing is probably attitude, and understanding where people's roles do lie […] If people don't see it as their responsibility because they think it's ours, then that's a real challenge - **P1, AT specialist, Col**

This discussion again highlights the need for a spread of AT competence across job roles, from highly specialist support to general of knowledge and skills across the whole staff group. The risks of this not being the case include AT becoming “siloed” into being the responsibility of a single profession. This was reported as leading both to other staff feeling it was not their responsibility or feeling their skills in the area were undervalued. This may be compounded by examples such as the following, where a participant describes AT training being delivered only to professions who are perceived to have a responsibility for provision and implementation:

> You speak about [AT] and people assume it's just communication devices. And in a lot of schools I've worked, they have always been managed - all this assessment provisioning - has been done by Speech and Language [Therapists]. And everybody says, “Oh, no, I can't touch that. I can't go anywhere near that device because… Speech and Language. They showed us how to do [something specific] and that's it.” A lot of the training's been [for] Speech and Language

Therapists, possibly OTs? I don't know, but nothing to the actual staff who are teaching, and you only get that training if you go out and find it. But it just seems to be delivered through in-house stuff by people who try and keep it, in my experience, keep it close to the chest and sort of act like it's a mysterious thing when in reality it's not. It's just like any other IT system that people can use if they're [shown how]. - **P17, Classroom Teacher, Sch**

Rating Tasks

Two rating tasks were undertaken by each group. These were presented in the form of two tables which listed AT-related job roles (see Table 10), with participants given definitions for each term to promote consistency. The first rating task asked participants to rate the necessary competence level for each job role in AT and IT / EdTech. Participants were also asked if initial and / or in-service AT training was required for the identified job roles. The second task used the same rating scale for skills and knowledge required across the four stages of the AT implementation (Table 11). For both tasks, the groups were asked to discuss the requirements and come to consensus on the completion of these tables.

Table 10: An example of a completed competency rating task

	AT	IT / EdTech	Initial AT Training?	In-Service AT Training?
SENCO / Senior Leader with SEND Responsibility	Advanced	Good to Advanced	Yes	Yes
Class Teachers / Lecturers	Good	Good to Advanced	Yes	Yes
Learning Support Staff	Good	Good	Yes	Yes
Therapists	Advanced	Good	Yes	Yes
AT Specialists	Expert	Advanced to Expert	Yes	Yes
IT Staff	Basic	Advanced	No	Yes
Other	-	-	-	-

For both rating tasks, groups were asked to suggest other roles that they felt might be missing from those in the table, and to suggest levels of competence for the relevant categories for these roles.

Definitions Provided to Focus Group Participants

General Definitions:

- **Assistive Technology:** any item, piece of equipment, software program, or product system that is used to increase, maintain, or improve the functional capabilities of persons with disabilities
- **IT / EdTech:** - information technology, or educational technology used to support teaching and learning.
- **Initial AT Training** - pre-qualification as part of initial training.
- **In-service AT training:** - post qualification

Competence Rating Scales:

- **Expert:** Able to undertake complex tasks independently and with sufficient experience and skills to allow the training of others
- **Advanced:** Able to undertake most tasks and knows how to refer to experts where required
- **Good:** Able to undertake standard tasks and knows how to make referral to others where required
- **Basic:** Able to undertake only the most basic of tasks and will refer to others where needed

AT Implementation Stages:

- **Assessment:** Ability to undertake assessment for assistive technology
- **Provisioning:** Ability to identify, source and purchase required equipment or software and supply this to the individual AT user
- **Ongoing Support:** The support required by the AT user and the team around them in an ongoing way
- **Review:** The setting of review points to verify what has been done, perhaps based on the individual and their requirements and also based on the confidence of the assessor as to what has been put in place

Table 11: Example of a completed AT implementation competence rating task

	Assessment	Provisioning	Ongoing Support	Review
SENCO / Senior Leader with SEND Responsibility	Good	Good	Good	Good
Class Teachers / Lecturers	Basic to Good	Basic	Good	Basic to Good
Learning Support Staff	Basic	Basic	Basic to Good	Basic
Therapists	Advanced	Advanced	Advanced	Advanced
AT Specialists	Advanced to Expert	Advanced to Expert	Advanced to Expert	Advanced to Expert
IT Staff	None	Basic to Good	None	None
Other	-	-	-	-

Analysis

Data were transferred to *IBM SPSS* (v. 29.0.1.0) for statistical analysis. Rating scales were transposed to numerical value (None / Not required = 0, Basic = 1, Good = 2, Advanced = 3, Expert = 4). Where focus groups had been unable to reach agreement (for example rating a job role as requiring “Good to Advanced” skills in a particular domain), the lower score was used in analysis so that the results would represent the minimum level of knowledge and skills felt to be required by participants. Modal averages for each item were calculated as these are more applicable to categorical data. These averages were used to calculate the consensus level across groups. Responses to binary items related to training were totalled and are reported separately.

Results

Results of the rating exercises are summarised in Table 12 and Table 13.

Table 12: Agreed minimum levels of competence in AT and IT / EdTech

Job Role	AT	IT / EdTech
SENCOs[19]	Good	Good
Class Teachers / Lecturers	Good	Good
Learning Support Staff	Good	Good
Therapists	Advanced	Good
AT Specialists	Expert	Advanced
IT Staff	Basic	Advanced

Kendall's *W* was chosen for analysis as it measures the agreement between independent raters when ranking or scoring items. It shows how similar the rankings are between raters, where a value of 1 would indicate perfect agreement on all items and a value of 0 would indicate no agreement at all. This test was used to determine the level of agreement between the nine focus groups on the **competence levels for assistive technology** required by each of the six professions. Analysis revealed there was statistically significant agreement between focus groups for this domain ($W = .636$, $p < .001$). The same test was used to determine the level of agreement between the nine focus groups on the **competence levels for IT / Ed Tech**. Again, this analysis revealed there was statistically significant agreement between focus groups for this domain ($W = .761$, $p < .001$).

[19] Including senior leaders with responsibility for SEND

Table 13: Agreed minimum levels of competence across the four phases of AT Implementation

Job Role	Assessment	Provision	Support	Review
SENCOs[11]	Good	Good	Good	Good
Class Teachers / Lecturers	Good	Basic	Good	Good
Learning Support Staff	Basic	Basic	Basic /Good	Good
Therapists	Advanced	Advanced[20]	Advanced	Advanced
AT Specialists	Expert	Expert	Expert	Expert
IT Staff	None	Good	None /Basic	None

Kendall's *W* was again used for each phase of implementation. Statistically significant agreement was observed between focus groups for Assessment ($W = .911$, $p < .001$), Provisioning ($W = .822$, $p < .001$), Support ($W = .786$, $p < .001$) and Review ($W = .906$, $p < .001$).

Focus group participants were asked whether they would expect each professional role to have received training in AT as part of their initial or pre-service training, and whether they would expect staff employed in each role to receive on-going, in-service training in AT. The results of this enquiry are presented in Table 14.

Table 14: Number of focus groups who agreed that pre-service and in-service AT training would be needed for each job role

Job Role	Pre-Service Training Needs?	In-Service Training Needs?
SENCOs[1]	8 (89%)	9 (100%)
Class Teachers / Lecturers	8 (89%)	9 (100%)
Learning Support Staff	5 (56%)	9 (100%)
Therapists	8 (89%)	9 (100%)
AT Specialists	8 (89%)	9 (100%)
IT Staff	2 (22%)	8 (89%)

[20] Central point of modal range (2-4) calculated

Discussion

The rating exercise undertaken by focus group participants (*n* = 22) demonstrates that there is good agreement on the levels of competence needed by a range of staff roles across the AT implementation pathway. Most notably, the need for AT Specialist roles to have expert-level skills across all phases of the implementation pathway is a clear indication that participants recognise the need for specific expertise in these roles. Coupled with the focus group discussions, this would seem to indicate an understanding and valuing of these roles and of having experts coordinating AT delivery.

Participants felt that leadership roles (SENCOs etc.) should have a good understanding and knowledge of all phases of AT implementation, which may reflect their leadership and coordination roles in the process. It was interesting to note that, whilst it was agreed that Learning Support Staff should have a good level of overall AT competence, participants felt that this staff group needed higher levels of skill in support and review than in assessment and provision. It is also interesting to note that only around half of participants felt Learning Support Staff needed any AT training prior to taking on the role. This may be reflective of the discussions reported in the literature about this group of staff often not having access to dedicated training and not having a specific professional qualification into which training might be incorporated. Equally, the literature highlights that Learning Support Staff often have a crucial role to play in AT implementation, so it is interesting to observe that these roles were not considered to need higher levels of skills and competence.

IT Support Staff were also not considered to need extensive knowledge of any part of AT implementation except provision – this is perhaps an understandable finding given their likely key role in purchasing, approval and setup of many types of AT equipment.

Overall, it is clear from this exercise that participants do not consider AT skills and knowledge to be the exclusive prevail of one particular job role. Whilst it is clear that there is a perception that AT Specialists should have a high level of expertise across all phases of AT implementation, skills and competencies across other job roles seem evenly distributed across the four phases of implementation.

The next section of this report synthesises the findings from all research activities and provides the basis for the competency framework, which concludes the document.

Evidence Synthesis

The research activities reported here have highlighted a considerably mixed picture of current AT training provision, but also some agreement on the minimum competency levels that might be expected for the range of professions that support AT users in schools and colleges.

A wide range of skills and knowledge needed to provide effective AT implementation was identified during this work. This is likely reflective of the broad range of AT users that professionals are expected to support. Indeed, participants in the survey and focus groups were working with a variety of learners in a range of contexts. The complexity of a learner and their technology undoubtedly impacts on the skills needed to carry out an assessment, with the skills required to undertake a more complex AT assessment for people with lower incidence, high impact disabilities being markedly different from those required to undertake an assessment for learners with higher incidence disabilities such as specific learning difficulties. This understanding provides a strong theoretical basis for the competency framework developed here: that the majority of staff in specialist schools and colleges should have some level of AT competence, but that the need for highly individualised implementation means that there will always be a need for specialist roles with high levels of skills and experience.

This section of the report addresses each research question in turn, discussing what has been learned in answer to each. The final section of the report then presents a proposed competency framework for AT professionals, drawn from the insights generated by this research.

What skills and knowledge do student-facing staff in special schools require to ensure that digital AT effectively supports their students?

Students and pupils in specialist colleges and special schools have a range of needs and, by extension, may make use of a broad range of AT equipment, strategies and systems. The literature review highlighted that pre-qualification training for staff cannot hope to cover every type of AT, or every system that professionals might encounter across their working lives, and so this training, where it exists is perhaps better used in teaching core principles of assessment, or the use of **AT frameworks**. The focus group participants indicated that school and college staff may not be equipped to meet the needs of all of their pupils, and that they sometimes felt training in the use of devices was reactive, triggered by the arrival of a pupil with a particular need.

A **knowledge of available AT** was considered important, which is understandable, and focus group participants also discussed the need to be able to **research new and**

developing AT devices and technologies. Knowledge of a range of **other technologies that interface with AT** such as seating, powered mobility, mounting, environmental controls and computer access were suggested by focus group participants, although the comparatively little time spent discussing these may suggest that only more AT-specific roles need to be highly skilled in these areas.

Knowledge at the person level, such as **knowledge of specific disabilities** (physical, sensory and cognitive) and **knowledge of individual users and their preferences** were important in both the focus groups and the reported literature. An understanding of how **environmental factors** may impact on AT implementation is also important. For many, the key environmental factors will be around the provisioning of AT. Skills needed in this area were shown to include a knowledge of **AT suppliers**, as well as **local and national funding routes for AT** which are appropriate for the individual learner's requirements. Understanding **procurement rules and processes** at both local and national level is deemed important for some staff groups. Whilst not all centres have a local **AT policy**, the importance of these where they were in place has been highlighted by this research. AT policies could be applied at the school, college or regional (Local Authority or Multi-Academy Trust) level. An agreed policy for AT supports equitable and timely provision of assessment and equipment and would be recommended for all contexts where AT is implemented.

One key area highlighted by both the literature review and the focus groups was the need for **basic computer literacy** or **basic IT skills** – this was highlighted as an area that was frequently deemed lacking for some staff and which could be a real barrier to successful AT implementation. Bridging the gap between mainstream IT and dedicated AT tools, the work highlights that AT staff should be familiar with "built-in" **accessibility features** in mainstream operating systems and productivity software, as a way to support learners using already available resources. Similarly, understanding of **compatibility between systems**, in order for the technology selected to be compatible with the requirements of the local context is important. This could include a knowledge of software tools being compatible with the local IT environment and infrastructure requirements.

Focus group participants also highlighted a range of personal attributes that were key skills in supporting students using AT. The need to be a "people person", in particular, was emphasised through the need for **good listening and interpersonal skills**, as well as **teamworking** and having a generally **positive attitude to AT and to realising the potential of learners**, as well as having **patience** in supporting learners and working with other staff.

At an institutional level, **management buy-in** and the creation and maintenance of an **AT-positive environment** were considered key, as shown in both the literature review and the focus groups. An **understanding of role boundaries** was also considered important.

What skills and knowledge are needed to effectively assess pupil AT needs?

This research highlighted that almost half of participants reported that their working contexts did not conduct AT assessments. Given that these participants constitute an expert group, it is likely that the percentage of schools and colleges not undertaking AT assessment across the country is even higher. The reasons for this may be connected to a lack of time, which was identified as a barrier in all three parts of the study. The precise skills needed to effectively assess learners for AT will, as discussed, depend in large part on the learner and their individual needs. However, this work has highlighted several common areas including observation skills, research skills, flexibility, enquiry and problem-solving skills.

Focus group participants cited the need to understand **person-centred assessment** as a way of interpreting information about a user's disability and subsequent AT needs in a way that took into account specifics of their personality, environment, goals and motivations. This could be supported by understanding how to **locate or request information on an AT user's previous use of AT** potentially using an AT framework tool to structure information. An understanding of **pedagogical factors** was considered important in relating a user's goals to curriculum requirements. The literature review highlights the importance of integrating AT with the curriculum, rather than having it stand alone, which underlines the importance of this group of skills.

Finally, the importance of **record keeping** and **documenting assessment findings** were reported to be important areas of knowledge for those involved in AT. In particular, the need to ensure that documentation was understood by a range of stakeholders, including families, was highlighted as a particular skill that AT professionals might need. **Communicating assessment findings** was similarly important, ensuring that information was communicated in a way that was appropriate for recipients.

Whilst many teachers and other school or college-based staff may be able to learn how to undertake an AT assessment to support someone with a specific learning disability it may not be practical for them to have the time or skills to learn how to undertake an AT assessment for people with more complex needs. Due to the responses related to AT assessment in the survey and focus groups that indicate that even AT mature contexts do not have the specialist staff or the skills required, it is suggested that some AT assessments, such as AAC assessment, will in most cases require a referral from school or college-based staff to a specialist service. It may be helpful to consider the development of an expected standard for AT assessment in schools and colleges. Without a high-quality AT assessment, it is not possible to be certain that an individual is being provided with the most appropriate tools to meet their needs.

Focus group findings also highlighted that a number of participants did not have access to an assessment kit of appropriate technology. The literature review revealed that a lack of access to equipment and software for learning and training was a limiting factor in staff improving their AT skills (Schaaf, 2018). It also follows that not having access to an assessment kit will limit the opportunity to carry out high-quality AT assessment for all learners. Indeed, it is important to consider that the wide-ranging nature of individual learners physical and cognitive needs leads on to a wide range of AT tools that would be suitable to support them. Given this, it is likely impossible for a school or college to be able to meet the AT needs of all pupils, and therefore referral to a specialist service should be considered, if AT needs cannot be met locally.

How do staff become aware of and access the AT that is available for their students?

The literature review highlighted that finding out about new AT is generally either self-directed (using social media or professional forums) or by engaging with individual suppliers. The focus group discussion and the survey responses appeared to reflect this. It is interesting to note that all stages of the research highlighted that training in AT is also often sought from suppliers. Whilst the literature review positioned supplier training as a means to fill a “gap” in training provision, focus group participants saw it more as a key part of the training ecosystem, sitting alongside sector support bodies, in-house peer-to-peer training and formal academic study. Online forums, mail-lists and individual contacts were other named sources of information about new AT.

In some focus groups there was discussion of historical offers of training and information from AT support bodies that no longer exist, now leading staff to look elsewhere or to forgo this support altogether. Longer serving staff members identified the loss of these services as a barrier to more effective AT implementation.

What skills and knowledge are needed to effectively support use of AT in the classroom?

Even though many participants reported that their schools and colleges did not undertake AT assessments, there is clearly still a need to support any AT used by a learner, and to maximise its value. Support for a range of AT systems was noted, including having a basic understanding of how specific systems work, and how they interface with other AT and mainstream technologies. Once again, basic **IT skills** and **troubleshooting** ability was highlighted, although the potential for AT specialist roles to undertake this for more complex learners and systems means that the competence of teaching and support staff may not need to be at such a high level. Basic competence in using IT and basic **digital skills** was reflected in both the literature review and focus groups. Robust digital skills

may lead to increased staff **confidence** in supporting pupils using AT. Focus group participants highlighted that when these skills are not present AT can often be abandoned, perhaps due to a minor issue. Allied to this, staff need to be confident enough to recognise opportunities for **scaling AT use** and for **adding functionality to AT systems** as necessary to support learners.

Participants in the focus groups identified the need for **ongoing maintenance** and, indeed, highlighted the potential for this to be a way to identify changing needs and potential review points.

The need to be aware of the relationship between home and school has also been highlighted by this work, with **supporting AT in the home** being identified as important to successful AT implementation.

Ongoing support of AT also included the importance of AT specialist staff having the skills to **train all staff members** using a train-the-trainer approach and creating a **community of practice** around AT implementation. The literature review underlined the value of communities of practice, showing that better results for learners and increased staff confidence were both positive outcomes where these were in place.

What skills are required to monitor effective use?

The study highlighted the need for staff to be able to **observe**, **monitor** and **collate sources of information** on AT use from the team around the user. A **knowledge of AT frameworks** that could help structure the gathering and presentation of information was highlighted as being important. In order to evidence progress, schools and colleges need to have an effective method to record, measure and document learner's progress, including progress with AT skills development.

Setting goals and targets was an area of focus, with participants in this study reporting that the need for all staff to have input into target setting and review was important. This reflects the general positive perception of inter-disciplinary working, and the need for staff to draw on each other's skills and roles in setting and evaluating AT targets. The focus groups highlighted the need to be aware of, and to **value small, incremental progress** for some learners, which in turn shows the importance of a **contextual knowledge of AT user's needs**, in order to understand what progression can look like for them. In order to make sense of this information a knowledge of AT frameworks is needed alongside a **knowledge of what AT tools can do**, to ensure that goals or targets are set realistically or appropriately.

Understanding the need for regular and as-required review is an important part of AT implementation. Here again, the need to be alert for opportunities to **scale AT use**, and

to identify new opportunities and functions was considered important as it increases the value of the AT to the user.

What skills and knowledge are needed to effectively support pupils to develop digital life skills, including use of assistive and accessible technology?

The skills needed to effectively support pupils to develop digital life skills included **e-safety skills**, skills in **mainstream digital devices**, teaching **basic IT and digital skills** as well as **research or horizon scanning for new technologies**. Awareness of the risks around social media, digital banking and fraud awareness were given as examples by focus group participants. Awareness of **accessibility features and supporting transferable skills** development through person centred approaches is another important area.

In essence, the research highlights the importance of staff being confident and up to date with digital skills in order to support learners. This is an especially important point as students are being provided with AT tools that could mean that they have access to computing and the internet for the first time.

How do the AT professional development needs of staff vary by Staff Role?

The literature review highlighted that all staff in AT roles had continuing professional development (CPD) needs. This often resulted from a general lack of AT training during pre-qualification study, and the need to keep pace with changes in technology. The findings of this study reinforce the understanding that AT implementation requires the input of a range of professionals, but that not all stakeholders need to be trained to the same level. The rating exercise carried out by the focus groups indicated a spread of training and development needs across staff groups, with AT Specialists needing to have expert-level competence across all four phases.

How do the AT professional development needs of staff vary by type of SEND?

As noted, the needs of learners with different types of SEND can vary widely. This research shows that it is perhaps unreasonable to expect all staff to be able to support all learners at the expert level. Classroom staff may, for example, need to have good skills in supporting learners to access existing AT and in monitoring progress. AT Specialists and Therapists may have greater involvement in the assessment and provision of AT for more complex learners.

How do the AT professional development needs of staff vary by student's levels of educational development?

Participants in the survey and focus group study reported that they are generally working with the most complex learners, in terms of their educational level and disabilities. It is therefore difficult to draw any firm conclusions about how training needs may vary based on the educational level of learners. It is clear that there will be training needs, such as training in basic IT and digital skills, that apply equally to all levels of learners' educational development.

How do the AT professional development needs of staff vary by age of student?

Participants in the survey reported that they were working across all age ranges. In the focus groups, no indication was given by participants that training needs varied according to learner's ages. It is of course reasonable to note that different age groups have different AT provision needs, as was noted by the perceived need for age-appropriate assessment and support tools. However, the core training needs were not reported to be different, based on the age of learners. Any variation in training requirements may be more directly related to the complexity of a learner's disability and the resulting AT requirements.

How do AT professional development needs of staff vary by Career Stage?

The findings of the literature review suggest that career stage has a fairly minimal impact on staff's professional development needs. One study observed a relationship between recency of qualification and confidence with AT, suggesting that perhaps the amount of training on pre-qualification courses has increased. It cannot however be ruled out that this was simply an effect of age – with more recently qualified professionals tending to be younger and to have greater familiarity with technology more generally. Although the majority of studies found in the literature are American, these suggested that the amount of pre-qualification training has in fact not changed much over the past decade. In-service training needs may therefore be broadly similar across career stages.

In this study, there was an insufficient spread of career stages to be able to draw reliable conclusions on this topic. The majority of focus group participants were more established in their careers, having been working in AT for five years or more. The need for the majority of staff groups to receive pre-qualification and in-service training was highlighted in the rating exercises, but this was not broken down further by career stage.

Competency Framework Development

The competency framework was derived principally from the codebook and the results of the rating exercise. For each of the four phases of AT implementation, relevant codebook items were mapped to a grid. This was then reviewed by a member of the research team. Additional items were incorporated following a review of the codebook against other existing AT frameworks (ESCO role definition, Natspec TechAbility Standards and the MSc EduAT Competency Framework) and from the findings of the literature review. Items were drawn from these other sources where it was felt that a significant gap had been identified. The draft framework was reviewed by four other members of the research team drawn from University of Dundee, Natspec TechAbility, Ace Centre and the Karten Network.

Each of the six job roles assessed by the focus groups was then rated on each item using the following parameters:

- That the modal average for each role in each implementation phase should be the same as the minimum agreed standard defined by the focus groups
- That the authors interpreted the level for each individual item based on their familiarity with the data collected
- That items which were clearly more relevant to a particular role (such as IT and Digital Skills elements being highly relevant for IT Staff, or pedagogical knowledge particularly relevant for teachers) were given scores that reflected this
- That items could be adjusted relative to one another (for example to differentiate the levels of a certain item between job roles where one job role clearly has a larger stake in delivering that item)

The authors reviewed the framework together, making adjustments during discussions. The framework was then reviewed by all project partners.

A decision was made to increase the minimum skills and competence levels for Learning Support Staff in several areas. This follows the identification in the literature review that these roles are often undervalued in AT provision, which appeared to be reflected in the rating exercise. Based on these findings the authors identified that it was important to ensure that these roles were rated sufficiently highly in order to reflect the importance highlighted in the research of these roles having improved access to training opportunities; something that the literature review again highlighted as being a barrier to development of AT skills for people in these roles.

The competency framework is included in Annex C and is also available as a supplementary Excel spreadsheet.

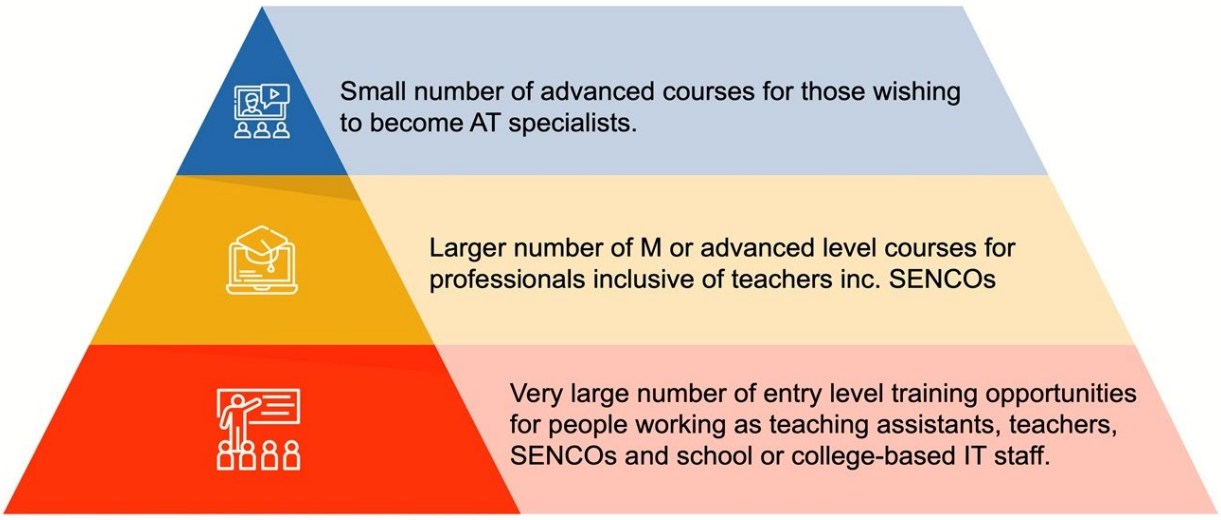
Areas of future development

Based on this research and the resulting competency framework, this report identifies the following opportunities for improving AT skills, competencies and training offers. These ideas are presented to enable staff working in special schools and specialist colleges to make best possible use of AT to support learners with SEND.

Make a range of AT training available for staff at all levels

The need for AT training is clear from all parts of this project. The research demonstrates that AT professionals perceive there to be a need for varying levels of skills and competence across all AT-related job roles. It follows, therefore that a range of training needs exist for these roles. We suggest the development of a training ecosystem (see Figure 2) that acknowledges the stated need for both basic training and high-level expert qualifications in AT. This point aligns with those made by Edyburn[21], who recommended training for all staff, in order to develop personnel preparation pathways that provide general and specialist AT knowledge.

Figure 2 An AT training ecosystem



We note the results of the literature review, which underlines the link between training, increased staff confidence and subsequent increased use of AT resulting in better support for learners as evidence for this need.

Regarding availability and access to training, the main barriers identified by the focus groups are a lack of time to be trained and funding for training. By providing specific

[21] Edyburn, D.L. (2020) *Rapid literature review on assistive technology in education: Research report*. Research Report DFERPPU/2019/038. Department for Education.

resources for additional AT specialist posts, these staff members can be embedded in schools and colleges to support colleagues and learners at the point that AT intervention is needed, thereby providing opportunity for upskilling without the need for dedicated time and funding for training. This should be seen as complementary to formal training and does not negate the need for developing specialist AT training programmes.

AT training at both pre-service and in-service career stages would be welcomed by staff in specialist education

There is evidence from the literature review that shows that both pre-service and in-service training is wanted and valued by AT staff. Based on the rating task undertaken in the focus groups, our participants identify that SENCOs and senior leaders, teachers, therapists and AT specialists would benefit from pre-service training. All roles can utilise in-service AT training in order to stay up to date. Additionally, even if pre-service training was introduced there is still the need to upskill those already working.

Consider the benefits of providing support for AT specialist roles and their training

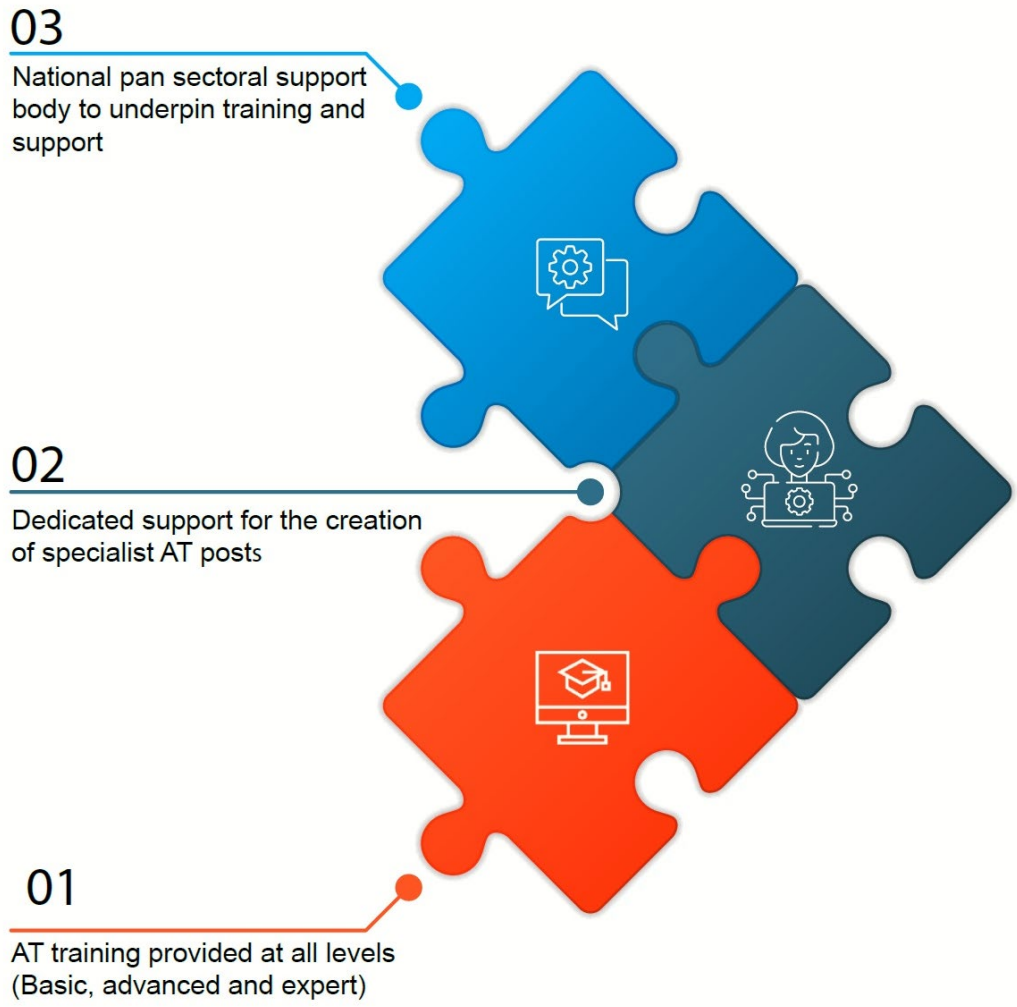
This research has highlighted that school and college staff across professions value access to expert AT professionals, and their expertise. Of particular note was the value placed on these roles by Senior Leaders in schools and colleges, although they highlighted budgetary constraints to creating or supporting them. We therefore identify the utility of increasing the numbers of AT specialists available, and for supporting the training of these roles. AT specialist roles are ideally suited to the task of delivering via the “train the trainer” approach, whereby expertise across an organisation is increased and supported by training from a dedicated specialist. AT specialist roles could provide more general levels of training to other staff within their organisation and could support communities of practice to develop. Promoting AT specialist roles and making these aspirational also has the potential to increase staff retention, ensuring that expertise is not lost from the field. This point also aligns with one made by Edyburn: develop personnel preparation pathways that develop specialised AT knowledge.

Explore the benefits of developing of AT support services

There is currently no national AT support service in education or any other part of the public sector. The survey response and the focus group data show that participants access training and support from a disparate range of sources. The literature review also identifies the link between increased training and support for staff, and the increased use of AT that leads to improved learner support. The research points to the value of communities of practice. The focus groups and survey show that presently many staff

must do a lot of time-consuming self-directed research, and they may benefit from greater access to peer support and communities of practice. It would be helpful to consider the role of AT support services in developing AT training and support offers for schools and colleges.

Figure 3 Potential AT Enabling Factors



Additionally, such an AT support body could identify and share good practice, possibly though a regional community of practice model (which was again identified in the literature review as supportive to staff) and could provide support for provisioning and procurement of AT. This support body could also support the development of AT loan libraries so that schools and colleges can borrow equipment to provide staff with the hands-on experience that Schaaf (2018) found was crucial to the development of AT skills and to allow schools to verify suitability ahead of making purchases. The development of an AT support service could facilitate and underpin the development of an improved AT training offer. Our suggestion (see Figure 3) is that a support service could be developed to provide both support and training, leading to upskilling staff in all

job roles. This point is also aligned with the Edyburn recommendation to establish AT teams, as local teams and professionals will also need an expert body to refer to when they need support.

Consider the development of expected standards for the four stages of AT implementation (assessment, provisioning, ongoing support and review) in schools and colleges

The range of AT assessments that can realistically be done by special school and specialist college staff can be defined through the development of an expected standard of what types of assessment could and should be undertaken locally and what AT assessments should be done through a referral to a specialist service, such as a referral to NHS specialist AAC hubs.

Opportunities for further research

We suggest consideration of an assessment-referral pathway, linked to the competency framework proposed in this work, which would allow staff to confidently understand what might be expected of them in terms of AT assessment and implementation, and to identify sources of support for more complex learners.

In addition to the development of expected standards for AT assessment the development of suggested AT assessment kits that are appropriate to the client groups that schools and colleges are working with could be established. This point is also identified in the Edyburn report that there is a need to standardise AT evaluation procedures and protocols. Standards or expected levels of competence and skills can be established across all stages of AT implementation, and this is identified as a potential area for future work.

The prioritisation of training requirements that are needed may be established through future research. Through a ‘discovery phase’ this subsequent work can identify what training and resources already exist, which can then be mapped onto the AT competency framework proposed here. A gap analysis is therefore possible, which can identify which parts of the framework are not well served by current offers.

It will also be important to define the relevant components of an AT training outcome measure so that the AT training that is provided can be evaluated. This supports a cycle of continuous improvement, which may optimise and improve the training offer nationwide, and improve outcomes for AT users in schools and colleges.

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Annex B – Focus Group Codebook

Skills and Knowledge Required to Support AT Assessment

Skill Types
Observation Skills
Researching AT Solutions
Flexibility and Enquiry Skills
Problem Solving Skills
Knowledge Types
Available AT Tools
Available AAC Tools
Basic Technology / IT and infrastructure understanding
Sensory impairment (visual)
Sensory impairment (hearing)
Mobility impairment
Locate AT User History / Knowledge of Specific AT User
Structured AT assessment methodology (e.g. SETT, HAAT)
Physical Disabilities
Available Low-Tech AT
Mainstream accessibility affordances
Person-centred approaches
Environmental factors that can influence assessment
Seating, positioning and mounting
Theory of Access Methods
Pedagogical factors
Staff Attributes
Interpersonal and listening skills
Enthusiasm for AT / Technology
Role boundaries

Methods used to document an assessment

No Assessment Undertaken / No Formal Assessment Documentation in Use
Undocumented Assessment
Researching AT Solutions
Flexibility and Enquiry Skills
Assessment Undertaken / Documentation in Use
Assessment Undertaken / Documentation in Use
Stakeholders with whom Assessment Findings are Shared
Class Teachers
Learning Support Staff
Parents or Families
Other Professionals (Therapists)
Other Education Organisations
The AT User Themselves
Methods of Assessment Information being Communicated
AT or AAC Passport Documentation
Bespoke Training
Whole Organisation Training
How-To Guide or Video
MIS System

Making Referrals to Other Services

Nature of External Service Referral
SLT / NHS Specialist AAC Service
High-Tech (EAT)
Therapy (SLT / OT)
AT Suppliers
Wheelchair Services
Private or Charitable Support

Ongoing Support for AT

Types of Ongoing AT Support Provided
Communication / SLT
General AT Support
Access Method Support – Switching
Mainstream Accessibility Affordances
Environmental Control Systems
Review of AT undertaken
Support for AT use at home
On demand maintenance
Extension or scaling of what the existing AT system can be used for
Ongoing support for AT is variable based on type of AT
Skills Needed for Ongoing AT Support
Competence in Using Technology / IT
Understanding of Specific Needs and Expected Outcomes
Awareness of when is it Appropriate to Add New Features to an AT System
Basic IT / AT Troubleshooting Skills
Re/training Support Staff to Support a User
Setting AT Targets
Ability to Research and Implement AT Solutions
Recording Actions
Systematic Fault Reporting
Modelling
Problem Solving
Staff Attributes
Staff Confidence with Technology
Patience in Supporting Other Staff or Students to Use Technology
Having High Aspirations for what AT Users Can Achieve

Effective AT Use

Skills Needed to Monitor Effective AT Use
Awareness of the Need to Scale Technology Use (to Support Outcomes)
Use of Alternative Communication Methods
Maintaining Trust and Good Working Relationships with Staff
Collating Evidence from the Team Around the AT User
Effective Communication Skills
Effective Observational Skills

Monitoring Effective AT Use

Knowledge Needed to Monitor Effective AT Use
Knowledge of AT Frameworks
Knowledge of what IT / AT Tools Can Do
Contextual Knowledge of the AT User's Needs

Digital Life Skills

Skills Needed to Effectively Support Pupils to Develop Digital Life Skills
Digital banking / Financial / Fraud Awareness
E-Safety
Social Media Awareness
Monitoring Parental Controls
Research or Horizon Scanning for New Technologies
Awareness of Accessibility Affordances
Mainstream Digital Devices
Supporting Transferable Skills Development through Person Centred Approaches
Teaching Basic IT / Digital Skills
Staff Attributes Needed to Effectively Support Pupils to Develop Digital Life Skills
Confidence with Digital Skills

AT Needs and Requirements

Types of Training Requirement (Staff)
AT Role and Responsibility Understanding
Types of AT Available
AT Standards
Accredited AT Courses
Basic AT Awareness Training for All Staff
General AT Training Requirement as Part of Initial Training
Disability Inclusion Training
Mainstream Digital Accessibility Affordances
Types of Training Requirement (Students)
Accredited AT Courses
Development Requirements
Identified Need for an AT Expert
Identified Need for Dedicated Staff Time for AT Development or Training
Identified Need for Dedicated Funding to Buy AT Equipment
Identified Need for Dedicated Funding to pay for AT Training
Identified Need for Senior Leadership Buy-in around AT
Identified Need for Policy Change to Support AT Development
Positive Elements
Dedicated AT Role Already in Place

Annex C – Proposed AT competency framework for staff in schools and college

Please also see supplied Excel document:
https://www.gov.uk//government/publications/developing-a-competency-framework-for-effective-assistive-technology-training

Skills needed for assessment of AT

Role	SENCOs	Class teacher / lecturer	Learning Support Staff	Therapists	AT specialists	IT Staff
Observation	Advanced	Advanced	Good	Expert	Expert	None
Researching AT solutions	Good	Good	Basic	Advanced	Expert	Basic
Flexibility and enquiry	Advanced	Advanced	Good	Advanced	Expert	None
Problem solving	Good	Good	Good	Advanced	Expert	Advanced
Interpersonal and listening	Advanced	Advanced	Advanced	Expert	Expert	Basic

Knowledge needed for assessment of AT

Role	SENCOs	Class teacher / lecturer	Learning Support Staff	Therapists	AT specialists	IT Staff
Available AT Tools	Good	Good	Good	Advanced	Expert	Basic
Available AAC Tools	Basic	Basic	Basic	Advanced	Advanced	Basic
Accessibility affordances	Advanced	Advanced	Good	Good	Expert	Basic
AT Assessment Frameworks	Good	Good	Good	Advanced	Expert	Basic
Seating, positioning and mounting	Basic	Basic	Basic	Expert	Advanced	None
Basic Technology / IT	Good	Good	Good	Good	Advanced	Expert
Locating AT user history	Advanced	Advanced	Good	Expert	Expert	None
Person centred approaches	Advanced	Advanced	Good	Expert	Expert	None
Sensory impairments - visual	Good	Good	Good	Expert	Advanced	None
Sensory impairments - hearing	Good	Good	Good	Expert	Advanced	None
Mobility impairments	Good	Good	Good	Advanced	Advanced	None
Physical disabilities	Good	Good	Good	Advanced	Advanced	None
Learning difficulties*	Advanced	Good	Good	Expert	Advanced	None
Environmental factors	Advanced	Advanced	Good	Advanced	Advanced	None
Pedagogical factors	Expert	Expert	Good	Good	Advanced	None
Documenting Assessment Findings	Advanced	Good	Basic	Expert	Expert	None
Communicating Assessment Findings	Advanced	Good	Basic	Expert	Expert	None
Making referrals to expert services	Good	Good	Basic	Expert	Expert	None

Skills needed for provisioning of AT

Role	SENCOs	Class teacher / lecturer	Learning Support Staff	Therapists	AT specialists	IT Staff
Training (AT users and staff) *	Advanced	Good	Good	Good	Advanced	None

Knowledge needed for provisioning of AT

Role	SENCOs	Class teacher / lecturer	Learning Support Staff	Thera-pists	AT special-ists	IT Staff
Available AT Tools	Good	Good	Basic	Advanced	Expert	Basic
Available AAC Tools	Good	Basic	Basic	Advanced	Advanced	Basic
Accessibility af-fordances	Good	Good	Basic	Advanced	Expert	Good
Procurement*	Advanced	Basic	None	Advanced	Expert	Advanced
Funding sources*	Advanced	Basic	None	Advanced	Expert	Basic
Basic Technology / IT	Good	Good	Good	Good	Advanced	Expert
Compatibility to con-text*	Good	Basic	None	Basic	Expert	Expert
AT Suppliers*	Advanced	Basic	None	Good	Expert	Good
Local AT policies*	Expert	Advanced	Good	Advanced	Expert	Good
Local availability of tools (already have)	Advanced	Good	Good	Advanced	Expert	Good
National policies*	Expert	Good	Basic	Advanced	Expert	Basic
Device and software setup*	Basic	Basic	Basic	Basic	Expert	Expert
Inventory manage-ment*	Basic	Basic	Basic	Basic	Good	Good

Ongoing support of AT: types of support

Role	SENCOs	Class teacher / lecturer	Learning Support Staff	Therapists	AT specialists	IT Staff
General AT support	Good	Good	Good	Good	Expert	Basic
Communication / SLT	Good	Good	Good	Expert	Advanced	None
Mainstream accessibility affordances	Advanced	Good	Good	Good	Expert	Basic
Access methods	Good	Good	Good	Expert	Expert	Basic
Environmental Control Systems	Basic	Basic	Basic	Good	Expert	Basic
AT use at home	Good	Basic	Basic	Good	Expert	None
Extension or scaling (of what the existing AT system can be used for)	Advanced	Advanced	Good	Expert	Expert	None
Maintenance or repair	Basic	Basic	Basic	Basic	Expert	Good

Skills needed for ongoing support of AT

Role	SENCOs	Class teacher / lecturer	Learning Support Staff	Therapists	AT specialists	IT Staff
Competence in using technology / IT	Good	Good	Good	Good	Expert	Expert
Basic IT / AT trouble-shooting skills	Good	Good	Good	Good	Expert	Expert
Understanding of specific needs and expected outcomes	Expert	Advanced	Good	Expert	Expert	None
Confidence of when is it appropriate to add new features to an AT system	Advanced	Good	Good	Advanced	Expert	None
Re/training supporting staff to support a user	Advanced	Good	Basic	Advanced	Expert	None
Setting AT targets	Advanced	Good	Basic	Expert	Expert	None
Ability to research and implement AT solutions	Good	Good	Good	Advanced	Expert	None
Recording actions	Advanced	Advanced	Good	Expert	Expert	None
Systematic fault reporting	Advanced	Advanced	Basic	Expert	Expert	Advanced
Modelling	Advanced	Advanced	Good	Expert	Expert	None
Problem solving	Advanced	Advanced	Good	Expert	Expert	Good

Knowledge needed for ongoing support of AT

Role	SENCOs	Class teacher / lecturer	Learning Support Staff	Therapists	AT specialists	IT Staff
Available AT Tools	Advanced	Good	Good	Expert	Expert	Basic
Available AAC Tools	Good	Good	Good	Expert	Advanced	Basic
Accessibility affordances	Advanced	Advanced	Good	Good	Expert	Basic
AT Assessment Frameworks	Good	Good	Basic	Expert	Expert	Basic
Seating, positioning and mounting	Basic	Basic	Basic	Expert	Advanced	None
Basic Technology / IT	Good	Good	Good	Good	Expert	Expert
Locating AT user history	Advanced	Advanced	Good	Expert	Expert	Basic
Person centred approaches	Expert	Advanced	Advanced	Expert	Expert	Basic
Sensory impairments - visual	Good	Good	Good	Advanced	Advanced	None
Sensory impairments - hearing	Good	Good	Good	Advanced	Advanced	None
Mobility impairments	Good	Good	Good	Advanced	Advanced	None
Physical disabilities	Good	Good	Good	Advanced	Advanced	None
Learning difficulties*	Advanced	Good	Good	Expert	Advanced	None
Environmental factors	Advanced	Advanced	Good	Advanced	Advanced	None
Pedagogical factors	Expert	Expert	Good	Good	Advanced	None
Documenting Assessment Findings	Advanced	Good	Basic	Expert	Expert	None
Communicating Assessment Findings	Advanced	Good	Basic	Expert	Expert	None
Making referrals to expert services	Advanced	Advanced	Basic	Expert	Expert	None

Knowledge needed for ongoing support of AT: Digital life skills

Role	SENCOs	Class teacher / lecturer	Learning Support Staff	Therapists	AT specialists	IT Staff
Mainstream digital devices	Good	Good	Good	Good	Expert	Expert
Awareness of accessibility affordances	Advanced	Advanced	Advanced	Advanced	Expert	Good
e-safety	Expert	Advanced	Advanced	Advanced	Expert	Expert
Digital banking/financial/fraud awareness	Advanced	Advanced	Advanced	Advanced	Expert	Expert
Monitoring or parental controls	Good	Good	Good	Good	Expert	Expert
Social media awareness	Good	Good	Good	Good	Expert	Expert
Teaching basic IT / Digital Skills	Good	Good	Basic	Basic	Expert	Advanced
Research or horizon scanning for new tech	Good	Basic	Basic	Good	Expert	Expert
Person centred approaches	Expert	Advanced	Advanced	Expert	Expert	Basic

Skills needed for monitoring and review of AT

Role	SENCOs	Class teacher / lecturer	Learning Support Staff	Therapists	AT specialists	IT Staff
Awareness of the need to scale technology use (to support outcomes)	Good	Good	Good	Expert	Expert	None
Collating evidence from the team around the AT user	Advanced	Advanced	Good	Expert	Expert	None
Effective Communication	Advanced	Advanced	Advanced	Expert	Expert	None
Effective Observation	Advanced	Advanced	Good	Expert	Expert	None
Maintaining trust and good working relation-ships with staff	Advanced	Advanced	Advanced	Expert	Expert	None
Use of alternative com-munication methods	Good	Good	Good	Expert	Expert	None

Knowledge needed for monitoring and review of AT

Role	SENCOs	Class teacher / lecturer	Learning Support Staff	Therapists	AT specialists	IT Staff
AT frameworks	Good	Good	Basic	Advanced	Expert	None
AT tools	Good	Good	Good	Advanced	Expert	Basic
IT tools	Good	Good	Good	Good	Expert	Expert
AT users' needs	Advanced	Advanced	Advanced	Expert	Expert	Basic

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