



University of Dundee

MSc Educational Assistive Technology

Slaughter, Rohan; Waller, Annalu; Griffiths, Tom

Published in:
Assistive Technology

DOI:
[10.3233/SHTI230661](https://doi.org/10.3233/SHTI230661)

Publication date:
2023

Document Version
Peer reviewed version

[Link to publication in Discovery Research Portal](#)

Citation for published version (APA):

Slaughter, R., Waller, A., & Griffiths, T. (2023). MSc Educational Assistive Technology: Training an Emergent Professional Group. In D. Archambault, & G. Kouroupetroglou (Eds.), *Assistive Technology: Shaping a Sustainable and Inclusive World* (pp. 461-468). (Studies in Health Technology and Informatics ; Vol. 306). IOS Press. <https://doi.org/10.3233/SHTI230661>

General rights

Copyright and moral rights for the publications made accessible in Discovery Research Portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

MSc Educational Assistive Technology: training an emergent professional group

Rohan SLAUGHTER^{a,1} and Annalu WALLER^b and Tom GRIFFITHS^c
^{a, b, c} *Discipline of Computing, School of Science and Engineering, University of
Dundee*

ORCID ID: Rohan Slaughter <https://orcid.org/0000-0002-7349-0210>

ORCID ID: Annalu Waller <https://orcid.org/0000-0002-3009-8040>

ORCID ID: Tom Griffiths <https://orcid.org/0000-0002-1542-8128>

Abstract. The MSc Educational Assistive Technology (EduAT), (1) is a recently established course, having welcomed the first cohort in January 2021, this group have recently completed their studies. At time of writing (summer 2023) the course is actively recruiting it's fourth cohort who are due to commence in January 2024. The course is now an established part of the AT training offer as the curriculum has been developed and delivered.

This paper supports the presentation prepared for AAATE 2023. The EduAT approach uses the ESCO (2) definition of the Assistive Technologist role, which is briefly summarised. The paper continues with how and why MSc EduAT was developed and explores how this MSc fits into a wider AT training ecosystem, noting roles that EduAT has been designed to support. An overview of the curriculum developed to train assistive technologists is included alongside a summary of what has been learned since the course began. The paper concludes by briefly summarising AT and AAC research group plans that have been informed by the experience of developing and delivering the MSc EduAT, and through the contributions students have made to the authors wider understanding of the assistive technology landscape in the UK and beyond.

Keywords. Assistive Technology, Assistive Technologist, Educational Assistive Technologist, EduAT, Education.

1. Developing MSc Educational Assistive Technology

The name 'Educational Assistive Technology' was chosen to differentiate the MSc EduAT from AT courses for rehabilitation engineers and clinical scientists, which have established professional routes available. The name also emphasises the educational context of the role, which includes an important 'train the trainer' aspect. Not all MSc EduAT students are employed in education contexts such as schools, colleges and universities, with some being drawn from health, social care, third sector or charity organisations and private AT or therapy-based practice. A common element however is that lifelong learning is an important aspect of the role, with support being provided by the Educational Assistive Technologist to the users of AT as well as the staff group who support the users of assistive technology. In late 2020 the first author established the EduAT competency framework (CF), based on work done to define the Assistive Technologist role in the ESCO (2) database. The first author collaborated with Natspec

¹ Corresponding Author: Rohan SLAUGHTER, rslaughter001@dundee.ac.uk

TechAbility (3) colleagues to support the creation of the ESCO 'Assistive Technologist' definition:

“Assistive technologists work to improve access to learning or/and improving independence and participation for individuals with disabilities. They do this through learner support and staff support with activities such as assessments, training and guidance. Assistive technologists have a good understanding of learners' needs and a wide technology knowledge relevant to learning, living or work context. The role requires knowledge of assistive technology hardware and software such as text to speech, prediction, dictation, vision and physical access tools” (2)

Whilst this definition does not have the power to make the 'Assistive Technologist' a protected title, it is useful to point to this definition, clarifying what the role and by association the MSc EduAT is, and what it is not. The Assistive Technologist role is transdisciplinary, with knowledge, skills and experience drawn from education or teaching, health or therapy and technology-based roles. The Assistive Technologist role has previously been explored by the first author (4). The EduAT CF is a superset of the ESCO definition of the role. The AT specific elements in the EduAT CF map to the TechAbility Standards (5), as the standards are widely known and used in the UK this supported understanding and acceptance in the target audience for the MSc EduAT. The ESCO definition maps across to a range of skills and knowledge present in health, education and technology-based roles.

The Dart (Disseminating Assistive Roles and Technology) Project (6) was funded by LSIS (learning and skills improvement service) and Jisc 2010-2015. The project sought to replicate the Assistive Technologist role from the specialist colleges that ran the Dart Project to the specialist and mainstream further education colleges that took part. This was achieved through offering consultancy as well as through running an AT workshop series. Due to the lack of a formal route into the Assistive Technologist role and to support the wider activities of the project, a curriculum was developed to train assistive technologists, this effort has been previously described by the first author (7). The research undertaken within the Dart Projects established that those organisations that had a dedicated AT role were ahead of other organisations in terms of developing their wider AT maturity than those organisations which had not established such a role (6). Much of the consultancy activity focussed on recruitment support for the Assistive Technologist role. It was difficult for organisations to recruit experienced individuals to Assistive Technologist roles. This further necessitated the development of the Dart Curriculum which identified existing academic and commercial training opportunities and offered a set of workshops targeted at gaps in AT training availability.

The Dart curriculum inspired the approach taken in MSc EduAT and has been expanded upon considerably. In early 2019 a group of interested parties gathered at UoD to consider the core module scope and structure. By the end of 2019, the first author had drafted the core modules and the programme specification, this effectively defined the MSc EduAT curriculum. During 2020 the modules and the programme specification were scrutinised internally and approved mid-2020.

The programme team are fortunate to have support from colleagues interested in AT from across the education sector and academia who formed the MSc EduAT advisory group, this group functions as 'critical friends' to the programme team. The purpose of this group is to review the curriculum to ensure it supports the requirements of students

and the organisations they work for. As the members of this group include individuals who work in or with organisations that typically employ MSc EduAT students there is a direct link to this important group of stakeholders. The group also includes disabled expert users of assistive technology, this ensures that the programme team uphold the commitment made in the groups terms of reference to foster co-production through user led experiences (for example through the input of the Universities User Centre (8) participants), with the views of disabled people clearly used to shape the programme content and methods of curriculum delivery.

2. A wider AT training ecosystem

It is important to note that the MSc EduAT is part of a wider ecosystem of AT training and development opportunities. A range of training is required at multiple levels, for people in different roles, and at different stages of their careers. This includes advanced courses such as the MSc EduAT, 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. There are a range of reasons as to why such professionals do not have the need, nor the time, to complete an MSc. It may be that a specific development opportunity has been identified, and this can be met by a shorter course. To meet the needs of professionals' CPD, the EduAT team are developing some of the MSc EduAT modules so that they can be offered as short courses. In addition a partnership has been established between Ace Centre Learning and the UoD to deliver accredited masters modules from Ace Centre starting from April 2023. This arrangement includes options for students to exit with a 60-credit PGCert (Post Graduate Certificate) in Specialist Assistive Technology (9).

A very much larger number of CPD (continuing professional development) entry level training opportunities are required for teaching assistants, teachers, therapists, parents, social care staff, and anyone else working to support AT users. All teaching, learning and care support staff should have some AT knowledge. To support this, Ace Centre, Natspec TechAbility and the University of Dundee (UoD) have partnered to produce a CPD course: Understanding the Benefits of Assistive Technology (10). This is a short, free online course, providing a basic introduction for all staff to what AT can achieve and which learners will benefit from AT.

3. The MSc EduAT Curriculum

The MSc EduAT has six core modules totalling 100 credits, these modules build knowledge sequentially and are taught in a specific order. Students choose 40 elective credits and complete a 40-credit project dissertation, totalling the 180 credits required for an MSc award. The first core module, the Educational Assistive Technologist establishes the modular nature of the role, including how it can change for different contexts. This is supported through sharing various assistive technologist role and person specifications from a range of contexts. This enables concepts such as multi-disciplinary, inter-disciplinary and trans-disciplinary working to be considered. Models of inter-professional collaboration such as the community of practice are introduced, and linked to assistive technology assessment, provisioning and ongoing support. The wider

research, policy, legislative and regulatory context is explored along with background information drawn from disability studies, curriculum development and educational theory. This establishes the EduAT method, a person-centred approach that puts user priorities first, involves users of assistive technology to the maximum extent possible and ensures that professional standards are maintained. A guided tutorial includes a supportive gap analysis using the EduAT Competency Framework (EduAT CF), this identifies learning opportunities that specific elective modules can address.

The second module, Introduction to AT systems and the third module, Mainstream and Specialist AT includes AT software, access hardware and the approaches needed to make best use of these technologies. Examples range from assistive technology from software to support people with a specific learning difficulty through to the most complex physical access systems and AAC (augmentative alternative communication) systems. To cover the full range of AT guest speakers are invited, comprising expert users of assistive technology, experts working in a range of AT services, developers of AT products or services and academics from other higher education organisations. This benefits students as they hear a wider range of views, have current material included and can ask questions of colleagues who have a broader range of expertise than the programme team alone could provide.

Assessment for AT provides students with the theoretical basis for AT assessment. AT assessment frameworks such as SETT and HAAT, as well as specific implementations of such frameworks are examined. This supports students to identify suitable assessment models for their working contexts. This can include considering templates, proformas or processes that are needed to undertake a high quality, person centred, needs based assessment. A range of examples of AT assessments, inclusive of AAC assessments, DSA (disabled students allowance) needs assessment and EAT (electronic assistive technology) assessment are presented by invited experts. These guest seminars explore specific AT assessment contexts. This includes referral routes and eligibility criteria, which is directly relevant to the working contexts of students.

The fifth core module, AT in Educational Programmes provides students with the tools to embed AT within taught programmes. Various AT or therapy outcome measures are considered to support evidence of progression, alongside education approaches such as RARPA (recognising and recording progress in non-accredited learning). Curriculum levels in the UK context are included, with examples of curricula from a range of organisations discussed. Professional standards drawn from teaching and the allied health professions are related to the Assistive Technologist role.

The final core module AT Partner Relationships covers the professional context of the AT role and potential professionalisation routes for the Assistive Technologist profession. The module includes making appropriate referrals into other parts of the education, health and social care systems in the UK. Further details of the core modules may be found on the MSc EduAT website (1).

The computing led elective modules include Assistive Technology Interaction (ATI), a reimagining of HCI (Human Computer Interaction) with AT specific examples. ATI provides opportunities for students to understand interface design and other usability and accessibility concepts. Work Based Skills and Innovative Practice provides opportunities for students to agree a specific learning contract with module tutors, this could be designed to address a specific learning opportunity such as writing up a work placement, it could also include conducting a literature review or developing a specific research skill. The flexibility of this module is its strength as it provides academic support to students to develop a skill or knowledge area that has been identified as a learning opportunity. It

is possible for both ATI and Work Based Skills and Innovative Practice to be used to develop research skills ahead of their application to the dissertation project. Students may also select from education led modules, The Inclusive Educator and Innovation in Education. Health led modules are also offered. The inclusion of modules from Education and Health further broadens student learning opportunities.

The 40-credit dissertation project is smaller than in other MSc programmes, to allow for a broader range of electives to be chosen. Students are encouraged to select a dissertation project that aligns with development requirements in their employing organisation, or placement context in the case of full-time students.

4. MSc EduAT students and course delivery

The course is 'blended', with the majority of delivery undertaken online as students are dispersed. Most students are employed full-time in organisations that support the use of AT, and students therefore undertake MSc EduAT coursework in their workplace. All assessment is coursework based and is designed so students may utilise work they are conducting within their employment as a basis for academic work, making assessment relevant and achievable. Further accommodations are made to support those who are working full time, such as scheduling synchronous online sessions outside of the core teaching day, due to many of the students working in educational contexts and teaching beyond the standard University teaching weeks to ensure that core module synchronous delivery is confined to a single afternoon per week.

One on-campus teaching and conference week is undertaken per year of part-time study, this includes delivery from the programme team, input from students, and invited expert guests. Second year's present their initial dissertation project ideas, so that peers, the programme team and invited members of the UoD User Centre (8) groups may provide useful feedback to the students whilst they are still at an early stage of developing their work. The involvement of expert users of AT ensures projects are informed by disabled peoples experiences. The on-campus week includes an exhibition from AT suppliers and developers, to which interested parties from the university and the region are invited. This adds to the breadth of experiences that we can offer to students. Social and collaboration opportunities are provided to ensure that students can get to know each other to support cooperation and groupwork and to encourage enjoyment of the on-campus experience.

Entry requirements are as flexible as possible to support a diverse range of students to join. Where students do not have a relevant first degree the programme team request evidence of AT experience gained from working in a suitable context. Students are drawn from a range of professions, this includes teachers, teaching assistants, therapists, therapy assistants or technicians and technologists from a variety of backgrounds. Most students have prior AT experience and are employed in a suitable AT environment, inclusive of education, social care or third sector organisations. This has meant that the part time route has been the most popular mode of delivery. Where a student is not employed in a suitable context, work placements may be identified, this is especially relevant to students who wish to undertake the course full time over the course of a single year.

Students are employed in a range of different organisations inclusive of membership bodies, specialist and mainstream schools and colleges, charities, third sector and care organisations, higher education, private AT or AAC practice and therapy services, local authority advisory teachers and electronic AT specialists, and NHS or healthcare services.

The first cohort included people working in AT mature organisations, this is to be expected as some aimed to develop their skills, address learning opportunities and validate existing skills and knowledge. The second and third cohorts are drawn from a diverse range of organisations. Overseas students have been made offers for 2024 entry and the EduAT team are developing AT placement opportunities to support this route.

5. What have we learned?

Some students are fully supported by their organisations; they have leadership buy-in and ownership of AT as a core part of their offer. This leads to improved AT training and development and active engagement in improving the wider AT service. Engagement is not always straightforward as there is huge variance in organisations AT maturity and very different expectations are made of the AT role. Where leaders or organisational commitment to AT is less well-defined students can find it difficult to embed the EduAT curriculum. In practical terms this can mean that there is variable budget support, the ability to buy assessment equipment is constrained and limited budget is available to support additional staff as the AT service scales. The EduAT programme team have seen occasional concerns with other professionals or groups around accepting the need for a 'professionalised AT role' in the unfounded belief that this may encroach on existing roles. More experienced students are undertaking MSc EduAT where they wish to fill gaps in knowledge and skills, or where they wanted to validate existing skills and knowledge and to update their own skills. Some students chose MSc EduAT where they wished to improve recognition for a professional AT role within their own organisation.

For those starting out with AT, MSc EduAT can provide knowledge skills and understanding to undertake assessment, provisioning and ongoing support of AT in a range of organisations. This point also supports organisations that wish to establish AT services, and due to difficulties inherent in the recruitment of AT professionals, some leaders may identify an existing member of staff who they wish to train up to become an Educational Assistive Technologist. This approach does have benefits such as the individual having a good understanding of the organisation and the supported AT users. There is now a 'formal' route into AT training for those who wish to train as an Assistive Technologist, this means students can develop as an Assistive Technologist or embed AT skills into other roles such as teacher, technologist or allied health professional.

The EduAT team have seen a wide range of examples of how AT is implemented, in some organisations the EduAT student may be the only person who is working to support AT, in others they are part of a wider AT team. There is variation in where AT is located in organisational structures, sometimes within education teams, therapy services, IT or within a dedicated AT or a broader technology team. The development of strong links between IT and AT colleagues is seen as vital for the development of high-quality AT services, due to the underpinning nature of IT services. If IT services are not responsive to the requirements of AT, then it is likely that AT services will be highly constrained. This point is explored within the EduAT curriculum.

The EduAT team have supported students and their leadership teams to embed the AT role. A useful feature of the course has been peer review and development through active learning within the student body. The programme team plan to encourage alumni to remain engaged within this community upon graduation.

6. Research priorities

The AAC and AT Research Group at the UoD has a long history of innovative user centred computing research (11). The group are working to ‘productise’ previous research to ensure that the outputs are useful to people who may benefit. For example, ACE-LP (12) a novel word, sentence and phrase predication method also uses AI (artificial intelligence) and ML (machine learning) scene analysis continues to be developed. The projects identified below are intended to address some of the challenges that have become evident during the development and delivery of MSc EduAT, they are also informed by the collective experience of the programme team and students.

6.1. SROI project: Modelling the impact of the AT role

Evidencing the impact of dedicated AT roles (such as the Educational Assistive Technologist), by investigating the social return on investment gained by society, AT providing or supporting organisations and critically the people who these organisations support to use AT. This project can be summarised as an interdisciplinary social return on investment project, aiming to inform evidence-based policy making. This project can consider quantitative data such as outcomes, destinations, achievement rates and where possible exam or course pass rates. In addition there is value in specific stories or case studies as they can bring a richness to the lived experience of individuals, it is acknowledged that it will be important not to represent these stories as data. Undertaking a medium to long term project looking at the impact of the Assistive Technologist role on organisations will investigate how changes are sustained, and subsequent policy proposals can be evidenced appropriately. It is thought to be helpful to clearly evidence the impact of AT roles, as it will be difficult to validate further investment in training, ringfenced funding for organisations to resource AT posts and for support around the creation of a national AT support organisation. The latter could underpin all related activity and link what is happening ‘on the ground’ to inform decision makers.

6.2. AT assessment tool development

The project proposes the building of a web-based AT Assessment software tool to support suitably qualified and experienced staff to undertake high quality needs-based assessment. It is not intended to replace people with AT skills, rather to support them. The aim is for the same tool to be useful for assessments undertaken at multiple educational stages, levels, ages, transition points, and for it to output useful reporting and guidance materials (e.g. AT or AAC passports), training and support materials for staff members who will be setting up or preparing AT equipment or software for the AT user.

6.3. AT training framework and discovery tool

Improving the discoverability of AT resources and training through the design of an AT training framework that identifies what training is needed by people in a range of roles, in different organisational contexts and at different stages of their AT journey. This is a relatively small-scale project centred on the proposal to develop of a web-based discovery tool that catalogues AT training and resources offered from within education contexts, health and social care contexts and commercially available training. The discovery tool would require the development of system logic to ensure that useful

courses and resources were presented to people who are working in various roles in different types of organisations and at various stages of their AT learning journey. To that end it is proposed that the research team would work with colleagues to develop a broad AT framework, possibly based on the AAC specific IPAACKS (NHS Education for Scotland, 2014) tool, which should permission be granted to create a child work would require both reworking to be more broadly applicable as well as the inclusion of an additional level 0 'awareness raising' level below the Level 1 in the current framework. The process by which existing courses are identified and catalogued with metadata to enable them to be selected by the web-based tool's system logic would also enable gaps to be identified, enabling future AT training course development to be targeted.

References

1. University of Dundee. Educational Assistive Technology [Internet]. University of Dundee. 2022 [cited 2023 May 30]. Available from: <https://www.dundee.ac.uk/postgraduate/educational-assistive-technology-part-time>
2. Esco [Internet]. Assistive Technologist. 2022 [cited 2023 May 30]. Available from: <https://esco.ec.europa.eu/en/classification/occupation?uri=http://data.europa.eu/esco/occupation/4e82464b-e9d7-4d51-9116-294ab40c5169>
3. Natspec. Natspec TechAbility [Internet]. TechAbility. 2023 [cited 2023 May 30]. Available from: <https://www.techability.org.uk/>
4. Slaughter R. Connect to Control: How we can do the 'bells and whistles'. *Communication Matters Journal*. 2014;28(1):11-4.
5. Natspec. TechAbility Standards [Internet]. TechAbility. 2023 [cited 2023 May 30]. Available from: <https://www.techability.org.uk/techability-standards/>
6. Maudslay L. Assistive technology in further education organisations 2014-15 [Internet]. 2015 Nov [cited 2023 May 30]. Available from: <https://repository.jisc.ac.uk/6243/1/NATSPEC-report-Oct15.pdf>
7. Slaughter R, Mobbs T. The DART Project: Improving Assistive Technology Provision in Further Education. *Communication Matters Journal*. 2015;29(2):24-6.
8. Dundee AAC Group. User Centre [Internet]. 2023 [cited 2023 May 30]. Available from: <https://aac.dundee.ac.uk/user-centre/>
9. Ace Centre. Assistive Technology for Complex Communication, Physical & Learning Needs [Internet]. Ace Centre. 2023 [cited 2023 May 30]. Available from: <https://acecentre.org.uk/>
10. Ace Centre. Understanding The Benefits of AT [Internet]. Ace Centre. 2022 [cited 2023 May 30]. Available from: <https://acecentre.org.uk/>
11. Waller A. Telling tales: unlocking the potential of AAC technologies: Telling tales: unlocking the potential of AAC technologies. *International Journal of Language & Communication Disorders*. 2019 Mar;54(2):159-69.
12. AAC Research Group. ACE-LP: Augmenting Communication using Environmental Data to drive Language Prediction | Dundee AAC Group [Internet]. 2023 [cited 2023 May 30]. Available from: <https://aac.dundee.ac.uk/ace-lp/>

