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SOAR
Inter Institutional Collaboration on Access

Assistive Technology (AT) in the Classroom

AN EVALUATION OF TWO MODELS OF PRACTICE

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TABLE OF CONTENTS

page

Table of Figures 3
Acknowledgements 5
Foreword 6

Executive Summary 7
Introduction 7
Research Questions 7
Data Collection 7
Key Findings 8
Key Recommendations – Practice 9
Key Recommendations – Policy 10

Chapter 1: Literature Review 11
1.0 Introduction 12
1.1 Background and context 12
1.2 TtT model of practice 15
1.3 Student-focused training model of practice 16
1.4 Conclusion 17

Chapter 2: AT Training in the South Cluster: An introduction to two models of practice 18
2.0 Introduction 19
2.1 IT Carlow TtT model of practice 19
2.1.1 Background 19
2.1.2 Aims and objectives 19
2.1.3 Programme content 20
2.2 Waterford IT (WIT) ATTAINS student-focused training model 20
2.2.1 Background 20
2.2.2 Aims and objectives 22
2.2.3 Programme content 22
2.3 Conclusion 23

Chapter 3: Methodology 24
3.0 Introduction 25
3.1 Research approach 25
3.2 Ethics 24
3.3 Methodology 24
3.4 Limitations 26

Chapter 4: Findings: TtT Model of Practice 28
4.0 Introduction 29
4.1 Collaboration and partnerships 29
4.2 Adequacy of training programme 30
4.2.1 Demographics 31
4.2.2 Prior awareness of AT 32
4.2.3 Learning accrued through training 34

4.2.4 Helpfulness of AT training programme 35
4.3 Impact 40
Universal Design for Learning (UDL) 42
4.4 Challenges and opportunities 43
Challenges related to COVID-19 46
4.5 Conclusion 49

Chapter 5: Findings: ATTAINS student-focused model of practice 50
5.0 Introduction 51
5.1 Collaboration and partnerships 51
5.2 Adequacy and usage 52
5.2.1 Awareness of AT prior to training programme 54
5.2.2 Learning and benefits accrued 55
5.3 Impact 58
5.4 Challenges and opportunities 59
5.4.1 Challenges 60
5.4.2 Opportunities and next steps 62
5.5 Conclusion 64

Chapter 6: Discussion and Recommendations 65
6.0 Discussion 66
6.1 Looking ahead – strategic plan 69
Key Recommendations – Practice 69
Key Recommendations – Policy 70

References 71

Appendix 1: Information Sheet for TtT Evaluation Participants 74
Appendix 2: IT Carlow Consent Form for Focus Groups/Interviews 75
Appendix 3: IT Carlow TtT Trainees Interview Guide 76
Appendix 4: IT Carlow Focus Group TtT Team Interview Guide 77
Appendix 5: Waterford IT: Consent Form Focus Group/Interviews 78
Appendix 6: Waterford IT: Focus Group ATTAINS Interview Guide 79
Appendix 7: Waterford IT: Focus Group/Interview Guide Schools/Education Centres 80
Appendix 8: Waterford IT: Information Sheet for Parents of Under-18 Students 81
Appendix 9:Waterford IT: Parents of Under 18 Student Consent Form 82
Appendix 10: Waterford IT: Under 18 Student Assent Form 83
Appendix 11: Waterford IT: Student Interview Guide 84
Appendix 12: Sample Session Plan IT Carlow 85
Appendix 13: Session Plan Waterford IT 87

Table of Figures

page

Figure 1: Gender of survey respondents 32
Figure 2: Professional role of survey respondents 32
Figure 3: Knowledge of AT prior to TtT training 33
Figure 4: Use of AT prior to TtT training 34
Figure 5: Knowledge of AT after TtT training 35
Figure 6: Helpfulness of AT TtT programme 36
Figure 7: Using AT without support post-training 38
Figure 8: Met needs of the students with diverse abilities 39
Figure 9: Support from training facilitator 40
Figure 10: Skills acquisition through TtT training 41
Figure 11: Changing AT approaches with students post-training 41
Figure 12: Integration of AT into the classroom 42
Figure 13: Confidence using AT after completing training 43
Figure 14: Time to practise using AT devices during training 45
Figure 15: Primary school cohort 48
Figure 16: Participation in future AT TtT courses 49
Figure 17: Recommendation of course to others 49
Figure 18: Meeting student needs – ATTAINS programme 53
Figure 19: Was there enough time to complete homework? 54
Figure 20: Was there enough time to practise using the AT devices? 54
Figure 21: Facilitator support 54
Figure 22: Knowledge of AT prior to training 55
Figure 23: Use of AT prior to training 56
Figure 24: Helpfulness of the ATTAINS programme 57
Figure 25: AT training's effect on time spent completing homework 57
Figure 26: Comfort completing homework 58
Figure 27: Confidence completing homework after AT training 58
Figure 28: Overall experience of ATTAINS 59

I remember my 8-year-old when I brought him up to get his dyslexic test and report … he just said to me – 'What does it mean if I am dyslexic?' and I remember just saying to him, 'It just means the school has to learn how to respond to you in a proper way – that is all it means. You don't have to do anything.'

Interview participant

Acknowledgements

The SOAR Project is an inter-institutional collaboration on Access. It brings together the South Cluster of higher education institutions (HEIs), i.e. Munster Technological University (MTU), Institute of Technology Carlow (IT Carlow), University College Cork (UCC), and Waterford Institute of Technology (WIT). In collaboration with community partners, the project devises and implements strategies to increase access to higher education for under-represented groups. The SOAR Project is funded by the Programme for Access to Higher Education (PATH) Strand 3 and is operationalised through five work streams: Travellers in Education; Enabling Transitions; Connecting Communities: Connecting Curriculum; 1916 Bursary Fund; and Partnership for Access. Both models for assistive technology (AT) training evaluated in this report, the Train the Trainer (TtT) model of practice used at IT Carlow and the student-focused ATTAINS – Assistive Technology Training Assisting Independent Success model of practice at Waterford IT, are part of the Enabling Transitions work stream.

We wish to extend our gratitude to the professionals and students who kindly participated in this research. We also wish to thank in particular the following professionals:

- Majella McCarthy, Enabling Transitions Project Lead, Disability Office, Waterford IT;
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- Aisling McHugh, Access Practitioner, IT Carlow;
- Angela Costelloe, Disability Officer, IT Carlow

Foreword



As Registrar of Waterford Institute of Technology, it is indeed a pleasure to present this important evaluation report on behalf of the South Cluster SOAR Project.

The SOAR Project is an inter-institutional collaboration on Access; it brings together the South Cluster – Institute of Technology Carlow, Munster Technological University, University College Cork, and Waterford Institute of Technology together with community partners to collaborate on strategies to increase access to higher education for under-represented groups. Funded by the Programme for Access to Higher Education (PATH) Strand 3, the project has five specific work streams including *Enabling Transitions* which focusses on enhancing access for students with disabilities.

Building on existing access knowledge and practice, the SOAR Project has enabled the development of new and innovative approaches to support the participation of access target groups in higher education. The integration of Assistive Technology in education is of universal benefit for all learners; for students with disabilities, it offers transformative impact on the learning experience and greatly enhances their transition readiness for higher education. Through the SOAR Project, Institute of Technology Carlow and Waterford Institute of Technology have devised initiatives to promote and support the integration of Assistive Technology in the classroom.

This report *Assistive Technology (AT) in the Classroom: An Evaluation of Two Models of Practice* offers an early evaluation of the two distinct programmes developed. It showcases both as models of best practice in school and community outreach, that is needs-based, responsive and developed in collaboration with partners. The IT Carlow Enabling Successful Transitions programme exemplifies a 'train-the-trainer' approach, building AT capacity and competency amongst educators for long-term, universal integration and adoption in schools and education centres. The Assistive Technology Training Assisting Independent Success (ATTAINS) programme developed by WIT demonstrates the value of a student-centred intervention that is responsive to individual need, empowering students and fostering learner autonomy. Finally, the report highlights the importance of Universal Design for Learning and whilst the integration of Assistive Technology benefits all students it can also facilitate greater equity of access for students with disabilities.

Derek O'Byrne
Vice President for Academic Affairs and Registrar
Waterford Institute of Technology

Executive Summary

Introduction

There is a significant range of assistive technology (AT) products and devices designed for inclusive educational settings, where students with diverse abilities can access technologies to support their learning. However, there is a lack of training for educators and challenges in the form of financial support and knowledge of the appropriate devices for students' needs. AT programmes using Train the Trainer' (TtT) models, and programmes using 'student-centred training' models of practice are under-researched. This evaluation aims to assess examples of each model of practice currently operational in the South Cluster – the TtT model of practice at IT Carlow and the ATTAINS programme at Waterford IT, which is largely post-primary student-focused. While the IT Carlow AT programme is relatively established, the ATTAINs programme was evaluated at its formative stage.

Research Questions

Five main research questions informed this evaluation:

1. How adequate are both programmes as they currently operate, in terms of raising awareness of AT, increasing proficiencies in AT and integrating AT into the classroom?

2. What was the impact of the AT training on the students with diverse abilities and on the educators who used AT in the classroom?

3. What were the challenges which were encountered in delivering the AT training programmes?

4. What are the opportunities for development and improvement in future iterations of both programmes?

5. In what way were collaboration and partnerships beneficial or insufficient in terms of development and delivery of both programmes?

Data Collection

Data was collected in three phases between December 2020 and June 2021, outlined below:

Phase 1: Two online surveys were conducted. An online survey for IT Carlow (sample surveys available on request[1]), conducted using the Google Forms platform, consisted of 30 questions. All questions, apart from one which referred to gender of the respondent, focused on the respondent's experience with Train the Trainer AT training. Both open-ended and closed questions were used throughout the survey. The survey was disseminated to 100 professionals in the education sector who had attended AT training workshops and 42 responses were received. This equated to a 42% response rate. Survey data was analysed using Excel. An online survey for students who attended Waterford ITs ATTAINS programme was also conducted. The survey was disseminated

1. Contact www.soarforaccess.ie for sample surveys.

to 10 students and 10 responses were received. This equated to a 100% response rate. Survey data was analysed using Excel.

Phase 2: Five qualitative semi-structured online interviews were conducted with four self-selected professionals related to the AT programme at IT Carlow, and one professional at Waterford IT. One interview was conducted with a post-primary student who had attended ATTAINS training at Waterford IT (see Appendix 11). Interviews were conducted by Dr Rebekah Brennan and Aoife Horgan of the SOAR Project and recorded using the Microsoft Teams platform and transcribed verbatim. The data from the interviews was thematically coded using NVIVO, a qualitative data management software programme. Thematic analysis was then used to analyse the data and organise the findings of the research.

Phase 3: Two focus group interviews took place with Access Practitioners at IT Carlow and Waterford IT (see Appendices 3 & 4 for both interview guides). Interviews were conducted by Dr Rebekah Brennan and Aoife Horgan of the SOAR Project and recorded using the Microsoft Teams platform and transcribed verbatim. The data from the interviews was thematically coded using NVIVO. Thematic analysis was then used to analyse the data and organise the findings of the research.

Key Findings

This evaluation aims to assess two examples of AT training operational in the South Cluster and to provide recommendations for the development of future iterations of such programmes both locally and nationally.

Key findings from this research evaluating the TtT model used by IT Carlow found mixed responses in the dataset about prior knowledge and use of AT. Survey data indicated a reasonable level of awareness proficiency prior to training amongst educators, however interview data indicated a low level of awareness or proficiency. Post training, knowledge, awareness and proficiency improved across the dataset. The impact of AT training was described as largely positive for students and professionals. Challenges identified included time constraints, COVID-19 and the financial cost of AT devices. The Enabling Transitions team involved with AT training for educators have embedded plans to continue and expand upon this model of practice, which from the evidence gathered, has been a success to date, with some opportunities for improvement identified through this research.

This evaluative research found that the ATTAINS programme operated in Waterford IT began with a strong network of collaborators and supporters. The most significant challenge that the programme faced was COVID-19 and the resultant school closures. Therefore, this report is best positioned as a "snapshot" of ATTAINs initial work, with recognition that since data collection for this report, significant developments have been made and will be the focus of an upcoming report. In the data for the evaluation of this initial workstream, 80% of survey respondents reported that the programme did meet their needs and all respondents reported that the AT training course was helpful to them. Expansion of the peer-to-peer mentoring model to include primary school

cohorts was discussed in the dataset from the ATTAINS team of professionals and was fully supported. Professionals expressed the need for additional support, perhaps from the higher education sector, in providing a centralised hub where educators could seek out information if needed around transitioning to college. Many of the professionals interviewed expressed a desire to increase their own knowledge of AT devices so that they could better meet the needs of their students. This appetite for professional development suggests that there may be benefit in developing a collaboration between both models with a TtT component and a student-focused element.

Overall, the data from this evaluation of both models indicates that a Universal Design for Learning (UDL) approach to AT is warranted. There has been recent research attention given to a UDL framework, which provides an optimal learning environment for all students through adaptation of a number of inclusive principles and flexible means of engagement, with the aim to cater for the diverse population of students along the continuum of their primary, post-primary, further and higher education trajectories (AHEAD, 2021, 2017; CAST, 2018). UDL relates to Assistive Technology (AT), as universal design, in addition to designing environments and services which are accessible and usable by all, also refers to the design of products of the same nature (AHEAD, 2017). This would include a 'whole school' approach, where AT is embedded into the curricula in primary, post-primary, further and higher education.

Key Recommendations – Practice

- Students who use AT should be given a meaningful role across the training delivery arc. Expansion of the peer-to-peer mentoring model was discussed in the dataset from the ATTAINS team of professionals. The value of peer-to-peer mentoring has been highlighted in previous work which studied the needs of students from specific target groups.
- Expansion of both models to the primary school cohort should be facilitated, as early intervention has been proven to result in better outcomes for persons with diverse abilities.
- There was evidence to suggest that educators had limited awareness of where to access support in preparing their students for using AT as part of transitioning to the higher education setting. It may be outside the remit of HEIs to provide such support, however an independent centralised AT hub, where primary and post-primary educators can go to seek information or other supports around AT, could provide coordinated AT connections between post-primary and higher education sectors.
- Disability Support Services in HEIs are aware of the benefits of AT for students with diverse abilities and encourage the appropriate use of AT that match the individual needs of students. This includes ensuring accessibility of a range of AT devices. In this regard, freeware[2] should be used wherever possible.
- As no standardised model of AT training currently exists, consideration of a programme for educators and students, which combines both models evaluated in this report,

2. Freeware is Assistive Technology which is no cost and openly available.



would be of benefit. Evidence from this research suggests that educators delivering AT training to students wish to build upon their own knowledge also in order to provide the best service possible to students.

- Sufficient time and resources should be allocated for training of students in AT within the curricula of post-primary schools, given student proficiency in AT enables wider educational benefits, learning pathways and allows for students to study all topics.

Key Recommendations – Policy

- More emphasis on AT in our national disability policies would support stakeholders and people who need AT devices in education to have their constitutional and human rights further enshrined in policy documents.
- Stakeholder engagement and participation in policy development and needs analysis are essential. The voices of students who use AT should be present at policy level.
- A specific national AT policy would be welcomed to further strengthen the recognition of need in this area, to ensure investment, and to develop a standardised method for AT training delivery and outcome measurement.
- Funding should be increased so as to ensure provision of appropriate AT devices and products that meet the individual and subjective needs of students from primary school level to higher education level, and to ensure that financial cost does not hinder educational pathways for people with diverse abilities. Additional promotion of freeware is vital.
- A research body that examines the connective relationship between success in educational settings and use of AT would help to develop a better understanding of the benefits and limitations of these products and devices.

CHAPTER 1

Literature Review

1.0 Introduction

This chapter will provide a narrative review of the extant literature on the use of AT in educational settings. It will first introduce AT by providing a background and context to the topic and will then focus on two models of AT training practice pertinent to this evaluation: a TtT approach and a student-focused training approach.

1.1 Background and context

> *'For most people, technology makes things easier. For persons with diverse abilities, technology makes things possible'* (International Business Machines (IBM), 1991, p. 2)

There has been significant progress in increasing access to higher education for students with diverse abilities over the past decade, reflected in the international (Francis et al., 2018; Hansen and Dawson, 2019) and national literature. This year, AHEAD published data which presented a 77% increase in students with diverse abilities within the Irish student population across the last eleven years (AHEAD, 2021). With this success comes a greater responsibility to meet the learning needs of and provide the necessary supports for a growing cohort of students. There has been recent research attention given to a Universal Design for Learning (UDL) framework, which provides an optimal learning environment for all students through adaptation of a number of inclusive principles and flexible means of engagement, with the aim to cater for the diverse population of students along the continuum of their primary, post-primary, further and higher education trajectories (AHEAD, 2021, 2017; CAST, 2018).

UDL relates to Assistive Technology (AT), as universal design, in addition to designing environments and services which are accessible and usable by all, also refers to the design of products of the same nature (AHEAD, 2017). This can involve providing alternative means of delivering information and content, e.g. transcripts where there may be audio files, and alternative text to describe images (Heelan, Tobin and Ryder, 2021) all of which can be facilitated easily with an AT product.

AT has been defined as 'any piece of equipment that can be used to increase, maintain or improve the functional capabilities of people' (adapted from Individuals with Disabilities Education Act (IDEA), 2004). The products and services that are classified as AT are vast and diverse. They fall into one of three categories: high, mid and low-tech (Kija, 2017; Johnstone et al., 2009), with a higher level of IT skills and training required for higher-tech devices. The World Health Organisation (WHO, 2019; Nordstrom et al., 2015) recently listed sixty-six AT products overall: fifty devices for people with diverse abilities, and sixteen specifically for people with visual impairment. The range of AT products is so broad that even within the smaller target group of the visually impaired, low-tech devices include

Braille typewriters[3] and white canes. Higher-tech devices and products for this cohort include screen readers;[4] magnifying devices; Braille tablets and embossers[5] (Senjem, 2019; American Foundation for the Blind, 2016; Johnstone et al., 2009). Screen readers in particular enable visually impaired students to participate fully in classroom activities (American Foundation for the Blind, 2016; Ampratwum, Offei and Notator, 2016). Similarly, AT devices to support students with a hearing impairment is a field in which new technologies are constantly emerging, including touchscreens, hearing loops[6] and alerting devices[7] (Bell and Foiret, 2020), which all help to improve a student's language skills – imperative to the development of a student's wellbeing, health and socioeconomic prospects (Tangcharoensathien et al., 2018).

The role of AT has high value in helping students to transition from secondary school settings to higher education (Hall, 2016), and the educational achievements of students with diverse abilities who used AT prior to higher education are noteworthy (Satterfield, 2020). Research from the US has found that students who do not develop the necessary proficiencies during their childhood and adolescent education to succeed at higher education level are less likely to complete their degree programmes (Francis et al., 2018). In the Irish context, respondents in an Enable Ireland survey (2020) reported positively on the usefulness of their AT, with 61% reporting that they cannot manage without it, however the sample were not all students. In general, the Irish literature on AT use among students is sparse. A recent cross-sectional survey conducted by AHEAD (2020), which focused on remote learning during COVID-19, found that of the 601 students with disabilities surveyed, just over one quarter (26%) reported using AT. Almost three quarters of those surveyed were not using any AT to support their work from home, presumably due to lack of access to devices held in schools. However, a wide body of evidence also highlights the need for provision of AT begins when students are in primary and post-primary education (Wynne et al., 2020; Satterfield, 2020; AHEAD, 2017). Additionally, a recent report published by the National Council for Special Education (NCSE) (Wynne et al., 2020) noted that transferring of AT between the primary and post-primary transition was problematic, and that the Department of Education and Skills could communicate to schools in a clearer way that AT can travel with a student from the primary to the post-primary educational setting.

The main goal for using AT in the context of this evaluation is to maintain or improve the ability of an individual to participate in education and function independently. There is longstanding interest in developing the field of AT (Scherer, 2004; Wise, Ring and Olson, 2000). The United Nations Convention on the Rights of Persons with Diverse abilities (CRPD) (2006) prioritised addressing access to AT for those who needed it (Munyoroa,

3. Braille typewriters have a key corresponding to each of the six dots of the Braille code, a space key, a backspace key, and a line space key.

4. Screen readers are software programs that allow blind or visually impaired users to read the text that is displayed on the computer screen with a speech synthesiser or Braille display.

5. A Braille embosser is an impact device that creates tactile dots on heavy paper, making written documents accessible to blind individuals.

6. A hearing loop (sometimes called an audio induction loop) is a special type of sound system for use by people with hearing aids.

7. Special alerting devices are available to wake a hearing-impaired person, indicate a visitor at the door or warn of an emergency.

Machimbidzab and Mutulac, 2021). However, to fulfil this directive requires awareness-raising and capacity-building amongst educators, the financial resources to support these processes and accessible acquisition and distribution of the technology itself among faculty, educators and students.

The research into AT in the education sector is sparse and conducted with limited sample sizes and limited training sessions (Edyburn, 2015; Melhuish, Faloon and Mehuish, 2010). There is no current standardised method on selection, implementation or measuring of outcomes of AT for students (Nordstrom et al., 2019). While we know the potential benefits of AT for students, we know little on how interventions should be optimally designed in the school setting (e.g. through a TtT model, a student-focused training model or another way). Findings from the existing published research have noted that educator proficiency and positive mindset towards AT are the most important drivers in the success of AT for students (Abbot et al., 2014). However, as the range of AT is so vast, an educator may find it difficult to choose the correct devices for their classroom and their individual students. Another factor is that certain AT software or devices can be expensive (Lyner-Cleophas, 2019; Visagie et al., 2016; Atkinson and Castro, 2008), and recommendations from professional diagnoses may include devices or AT software that a school or a parent cannot afford. It is important here to consider that the ordinary costs of living associated with having a disability are documented by Cullinan and Lyons (2015) as being between an additional €207 and €276 per week when compared to a non-disabled person. There are other options within the range of AT which are open source and free of charge (freeware) and many of these function just as well as their more expensive counterparts (Sullivan, 2019).

Although smartphones/tablets with assistive apps are becoming more accessible, the majority of existing AT is purchased in bulk at organisational level from specialists (Kelly and Padden, 2018) to reduce costs, which can create distance between the needs of the user (in this case the student) and the purchasing power of the organisation (i.e. the educational body) (MacLachlan et al., 2018). While a desire for greater inclusion and equity recognises the importance of supporting people with diverse abilities in educational spaces, the reality is people with diverse abilities may be excluded from accessing AT for financial reasons (Lyner-Cleophas, 2019; Visagie et al., 2016; Atkinson and Castro, 2008). Increased access to freeware may be a solution (Lyner-Cleophas, 2019). The relationship between AT and students is best conceptualised as a connection rather than a dependency (Gibson, Carnevale and King, 2012). The aim of this review is to outline the literature on this connective relationship through two alternative models of practice (TtT/student-focused training).

1.2 TtT model of practice

Inclusive philosophy requires effective practice to become meaningful. The creation of an educational environment, well-resourced to support full participation of all, requires trained educators and an inclusive ethos toward diverse abilities (Mackenzie, Cologon and Fenech, 2016). The Association for the Advancement of Assistive Technology in Europe (AAATE) published a position paper in 2013 which highlighted that professionals must be competent; information must be available to them and they must be granted the opportunity for feedback on their use of AT (De Witte et al., 2018). The NCSE report (2020) underscored training as a significant area for development in the field of AT in education. Recent research (Munyoroa, Machimbidzab and Mutulac, 2021) echoed that a lack of training for educators is a key challenge to successful implementation of AT in educational spaces (77.2% of teachers agreed or strongly agreed that a lack of training exists). Where lack of training exists, educators tend to use more low-tech devices in classrooms rather than attempting to use higher-tech products – a decision based on levels of knowledge and understanding, rather than on the needs of the student. Other issues encountered included training being held outside of their institute or during working hours (Abu-Alghayth, 2020), rendering it inaccessible for some. Educators' experience of using AT in the classroom was found to be positively influenced by increased use of such technology; education on AT; school technology support; and confidence and comfort with using the devices (Liu et al., 2017). Zilz and Pang (2019) found that while children with diverse abilities would benefit significantly in their development from the use of AT, a lack of teacher training and knowledge of which AT products would be a good fit for their students' subjective needs acted as a barrier to integration of AT into the classroom. In a Swedish study which looked at AT devices for students with reading difficulties, the authors found that support amongst the entire staff body within pedagogical settings was a positive indicator of successful use of AT (Nordstrom et al., 2019).

Educators are highly motivated to scaffold students learning through their own professional development in use of AT (Fleer, 2010; Bozhovich, 2004). They are aware that purposeful learning occurs through the connection between the student, the educator and the AT device (Edyburn, 2006; Kozulin, 1998). The benefits for the student are such that independence is achieved through this connection, an independence that can potentially support a student to live with their peers in higher education and thrive in the college environment (Fleer, 2010; Kravtsova and Kravtsova, 2010). One case study of a TtT model entitled 'Health Matters' (Sisirak and Yen-Ching Chang, 2013), which focused on a health promotion intervention for adults with intellectually diverse abilities, found significant improvements in the overall health and wellbeing of the adults that were being cared for once carers had completed their training. The newly acquired knowledge of the carers resulted in enhanced self-efficacy in those that were being cared for, helping them to better care for themselves. Although research in the AT context is limited, there is evidence to suggest that a TtT model works within cohorts of people with diverse abilities and their carers.

To summarise, robust teacher training is required for successful implementation of AT within the classroom. There is sufficient evidence to conclude that educators feel underprepared and underequipped with knowledge of AT in order to meet their students' needs (Munyoroa, Machimbidzab and Mutulac, 2021; Wynne et al., 2020). Therefore, a need to assess the adequacy and impact of an AT TtT model in an educational setting exists.

1.3 Student-focused training model of practice

It has been argued that children must have self-determination to prepare them for active participation in society (Law, 1998). However, this autonomy must be age, stage and capacity appropriate (Wehmeyer, 1997). A recent study found that AT use among children had a positive impact across a range of indicators of self-determination including competence, adaptability, self-esteem, self-efficacy, wellbeing and educational engagement (McNicholl, Desmond and Gallagher, 2020). Furthermore, previous research has found that children who were taught to use AT devices began to demonstrate improvements in decision-making and autonomy (becoming more independent) (Lenker et al., 2013; Bowser and Reed, 2012; Kling et al., 2010). This is linked to the concept of self-determination, the ability to socialise with others and leading a more independent life as young adults. A needs analysis of students with diverse abilities conducted in Sweden (Nordstrom et al., 2019) found that most commonly, students experienced problems within academic, psychosocial and cognitive activities, which are core components of formal educational curricula. The use of AT in the form of notetaking alternatives (such as apps); multimedia presentations; graphic organisers;[8] text-to-speech software[9] and visualisation tools[10] alleviated and managed many of these problems so that the students may be afforded the opportunity to progress and fulfil their potential. A 2020 study conducted in Tanzania found that, despite familiarity with AT and the clear benefits of educational engagement with AT, students with visual impairment lacked choice when it came to AT devices (Kisanga and Kisanga, 2020). Another limitation to student-focused training was seen in the literature as being within the younger age group, who required more help for longer than older students in order to use the AT independently (Nordstrom et al., 2019). Older users of AT place significant value on how it supports their independence and participation in school (Lenker et al., 2013). A UDL approach places the student at the centre of decision making, focusing on what they need, prefer and benefit from (CAST, 2018). In a 2017 report from AHEAD, it was highlighted that students have likely grown up in or inhabit a digital world, which supports the use of Assistive Technology. In this regard, it is important for research to have a greater focus on providing a platform for the voices of student users of AT, who are the experts on what they need.

8. Graphic organisers are pedagogical tools that express the logic and relationships between items, facts, and concepts in a visualised pattern and help you understand and instruct the connotation of things better.

9. When using text to speech software, the individual writes a message or uploads a text file, and an online voice is generated to communicate the message.

10. Data visualisation tools are used to represent information with graphs, charts, tables, maps, and other detailed visuals.

1.4 Conclusion

This literature review has highlighted that while there is a shared concern, aspiration and hope for inclusive educational settings using AT, there is a lack of training for educators and challenges in the form of financial support to promote widespread and equitable accessibility. These challenges limit educators' use of AT with students who would benefit significantly from increased access to bespoke products and devices aligned to their individual learning needs. International and Irish-based literature indicates that additional systemic resourcing of AT and disability services within educational institutions enhances student participation, supports educators' investment and interest in their practice, and improves overall learning and teaching processes and student experience. The promotion and use of freeware enables increased accessibility and equity for learners with diverse abilities. From this review of the literature, it appears that AT programmes using TtT models, and programmes using student training models of practice, are under-documented. This evaluation aims to make a contribution to knowledge, through assessing examples of each model of practice operational in the South Cluster, and also to provide recommendations for the development of future iterations of such programmes nationally. Chapter 2 will provide an overview of the TtT model used by IT Carlow and the initial beginnings of a student-focused training model – ATTAINS – used by Waterford IT.

CHAPTER 2

AT Training in the South Cluster:

An introduction to two models of practice

2.0 Introduction

This chapter will provide an overview of two AT training models in the South Cluster under evaluation, namely the TtT model used by IT Carlow and the student-focused training ATTAINS model used by Waterford IT. It will provide a background to both models of practice and outline their individual aims and objectives.

2.1 IT Carlow TtT model of practice

2.1.1 Background

The IT Carlow 'Enabling Successful Transitions' is a TtT model of AT training developed by Student Services in IT Carlow and delivered to participating post-primary schools and education centres including higher education institutions. Training is workshopped over one or two days and then ideally, another workshop is provided some months later in order to fully complete training. The people who attend the AT training workshops are educators, student mentors and other members of the staff body with an interest in the subject of AT for their students. The overall aim of the programme is to train educators so that they are in a position to train students to use the AT in the classroom. Due to the COVID-19 pandemic and associated school closures spanning 2020 to time of writing, the 'Enabling Successful Transitions' programme had to adjust to online delivery, rather than visiting schools and delivering workshops face to face (See Appendix 12 for Session plan).

2.1.2 Aims and objectives

Using a TtT approach the Enabling Transitions Project seeks to:

- Increase the level of awareness among educators of AT, both hardware and software, that can support the needs of their students with diverse abilities/learning diverse abilities.
- Increase the level of awareness of the underlying requirements which enable students to make good use of their AT to include a basic knowledge of IT skills while ensuring educators make the teaching and learning materials accessible.
- Provide hands-on training in a variety of technologies for:
  - > students with specific learning difficulties
  - > students who are hearing impaired
  - > students who are visually impaired
  - > students who have physical difficulties/diverse abilities.
- Increase awareness of and provide hands-on experience in:
  - > freeware on IOS and Android appliances
  - > accessibility features on IOS and Android appliances

- Introduce educators to the range of free online resources available to support students' understanding of their curriculum
- Help educators develop an understanding of, and implementation of, AT in the classroom
- Help educators develop an understanding of the ways in which AT translates to the home environment
- Create a toolkit of AT during the course of the programme.

2.1.3 Programme content

A variety of AT is introduced to educators to allow them to adapt their teaching methods and materials to accommodate students with diverse abilities. This AT course also emphasises the importance of students developing their basic IT skills. Skills such as using a computer mouse, a computer keyboard and recognising all elements of using a computer, as well as using the internet and basic file management are skills that can contribute to making a student's academic life easier. In addition, the sharing of materials from educator to student is an important focus of the programme.

On completion of this TtT programme, educators gain a working knowledge of software and hardware which they can use with their students. The course is based on interactive demonstrations and also hands-on practical workshops where educators will have the opportunity to learn to use the specific software, hardware and adaptations in class. Group discussion on how to implement these technologies in the classroom and how to encourage and enable their use for homework are facilitated. Sharing of participants' own experience, and question and answer sessions are encouraged. The creation of individual AT toolkits also forms part of the learning methodologies. The AT Toolkit is formed from video links of each categorised piece of software/hardware used in the programme, which is sent to all participants either individually or through the Education Centres, ETB's Training and Development offices etc. Participants can then refer back to the toolkit when/if they are working with a student, diagnosed with a disability that they were not aware of previously. The AT programme ensures that the educational needs of students with diverse abilities are catered for and reflects the vision of Ireland's (2011) *National Strategy for Inclusion* 2030. The knowledge of software gained by educators from the programme allows for increased student use of AT throughout education settings in the region.

2.2 Waterford IT (WIT) ATTAINS student-focused training model

2.2.1 Background

The 'ATTAINS' (Assistive Technology Training Assisting Independent Success) programme was developed by the Disability Office at WIT, under the aegis of the PATH (SOAR)/

WIT Enabling Transitions Project. The programme has been piloted by the WIT Enabling Transitions Team, endeavouring to develop a model of practice for building AT competency and adoption in schools. This report refers to one initial workstream when the programme was in its infancy: an Assistive Technology Homework Club and Assistive Technology Skills Training Programme to junior and senior cycle students respectively, attending a DEIS post-primary school in Waterford (Feb-March 2020).

This report is best positioned as a 'snapshot' of a piece of work conducted by the WIT Enabling Transitions Team over a 3 month period, as an initial initiative at the beginning of the programme. As a result, this evaluation relates to the first AT outreach training programme which was delivered within one DEIS post-primary school. As this was in the early stages of the project development, and the initial pilot was only partially completed because of Covid-19, it involved only one cohort of students and utilised one approach to programme delivery- a partnership approach with a community based organisation, namely the Waterford Schools Completion Team and the DEIS school involved. Developments since this evaluation will be the subject of a future report.

Data collected for this report refers to an AT programme targeted at students with a diagnosed specific learning disability (SpLD). All students participating are purposively selected by schools' Special Education Needs Coordinators (SENCO). One of the professionals interviewed for this research also highlighted that some of the students targeted for the programme attend DEIS schools:

> '*So we were looking desperately for something to engage with at junior cycle and when this came along – when [NAME] who used to work for us came along with this idea – we thought it was great because it fits into our remit which is to support children with additional learning needs.*
>
> *And I think in terms of the whole idea behind it is in terms of access so if our – it is in a DEIS school so children are educationally disadvantaged – and if we are – that is the thinking behind it – to encourage participation rates of children with educational disadvantage and with additional learning needs – to access third level in our locality.'*
>
> FG 2, Professionals

Part 1 of the student-centred programme (Weeks 1–6) is designed for students with specific learning diverse abilities (SpLD). Weeks 1–2 focus on schools' learning platforms (i.e., Microsoft Office 365/Google applications). Weeks 3–6 introduces students to free AT that can be used to support the completion of home/schoolwork and study.

Part 2 of the programme focuses on preparation for higher education and state examinations. Technologies available to students with specific learning diverse abilities within a higher education institute are introduced, namely, *C-pen*[11] and *Claro Pro*[12] software. The *C-pen* and *Claro Pro* programmes are introduced to senior cycle students

11. A C-Pen is a pen scanner which assists with processing of written text.

12. ClaroRead is a software program that assists with reading, writing, studying and sitting exams.

only, in preparation for transitioning to higher education. Another key element of Phase 2 is the focus on the Exam Reader Pen. Exams pens are being introduced in post-primary schools for state examinations, replacing human readers.

2.2.2 Aims and objectives

The aim of this programme is to introduce students to AT in order to support independent learning. Reflection and opportunities to independently practise skills are built into this programme.

Part 1 Objectives:

- To improve students' knowledge and understanding and use of learning platforms (i.e. Microsoft Office 365/Google applications).
- To help promote usage and build competency in using Assistive Technology to support independent learning and academic performance.
- To help overcome barriers within students' learning environment by using free Assistive Technology to support home/schoolwork and study.
- To enable a smoother transition to higher education as students will be familiar with writing/reading/studying tools for their needs as the programme utilises adapted Assistive Technology supports available to students at third level. This is further developed in Part 2 of the programme.

Part 2 Objectives:

- To promote college readiness amongst students with learning diverse abilities; introducing senior cycle students to AT supports available to students within higher education.
- To prepare for state examinations (Junior/Leaving Cert); for students awarded the accommodation of the Exam Reader Pen.[13]

2.2.3 Programme content

The content of the ATTAINS programme has been developed in consultation with post-primary teachers and is provided as a guideline for programme delivery. The programme content can be tailored to specific school/educators/student requirements. Training can be delivered in a group or individual format. Time is built into each session for students to complete homework/study. The programme timeline can be extended where necessary to enable completion over a longer time period (See Appendix 13 for session plans).

13. The Exam Reader pen is a totally portable, pocket-sized device that reads text out loud with a human-like digital voice.

2.3 Conclusion

This chapter has provided an overview of the evolution of two separate AT training models of practice operational in the South Cluster. It has outlined how each programme was initiated and given an indication of the aims and objectives of the training and the course content. Both of these AT training models are the subject of this evaluation research. Chapter 3 will provide a detailed description of the methodology employed to conduct the evaluation.

CHAPTER 3

Methodology

3.0 Introduction

This chapter details the methodology employed in the research for this evaluation, including discussion of research approach, ethical protocol, data collection methods, study participants and data analysis.

3.1 Research approach

The aim of this research was to garner stakeholder feedback on both models of AT training practice. In terms of research methodology, a mixed methods approach was taken to ensure the participants' experiences were accurately captured and represented. A combined use of qualitative and quantitative methods 'adds rigor, breadth complexity, richness, and depth to any inquiry' (Denzin, 2012: 82), and data collection instruments were selected in line with this ethos.

3.2 Ethics

Informed consent was obtained from all participants. Participants were made aware that the research project had received ethical approval from the Social Research Ethics Committee at UCC and was governed by ethical principles including anonymity; confidentiality; the safety of participants; informed consent; and freedom to withdraw from the study (see Appendices 1 and 2 for student information sheet, primary caregiver consent form and student assent form; Appendices 3 and 4 for information sheet for consent form for the focus groups/interviews with professional participants). Consent for participation in surveys was obtained at the beginning of the survey by asking respondents to indicate their consent by ticking a box after reading the essential information around informed consent and participant rights. In relation to the post-primary school student interview, consent was obtained from primary caregivers and assent was obtained from students.

3.3 Methodology

The fieldwork for this research took place between December 2020 and June 2021 and consisted of three phases. All instruments for data collection from students were reviewed by students with diverse abilities to ensure their suitability prior to use. The participatory nature of the research design, where students reviewed data collection instruments, was intentionally selected to support empowerment and self-advocacy (Clifford, 2013; Block et al., 2011; Morgan and Yoder 2012). This approach represents 'a method by which

individuals and communities exert influence and control over resources, events, and outcomes' (Block et al. 2011).

Phase 1: Two online surveys were conducted. An online survey for IT Carlow (sample surveys available on request[14]), conducted using the Google Forms platform, consisted of 30 questions. All questions, apart from one which referred to gender of the respondent, focused on the respondent's experience with AT training. Open-ended and closed questions were used throughout the survey. The survey was disseminated to 100 educators and 42 responses were received, which equated to a 42% response rate. Survey data was analysed using Excel. An online survey for Waterford IT was also conducted. The survey was disseminated to 10 students and 10 responses were received, which equated to a 100% response rate. Survey data was analysed using Excel.

Phase 2: Five qualitative semi-structured online interviews were conducted with four self-selected professionals related to the AT programme at IT Carlow, and one professional at Waterford IT. One interview was conducted with a post-primary student who had attended AT training at Waterford IT (see Appendix 11 for interview guide). Interviews were conducted by Dr Rebekah Brennan and Aoife Horgan of the SOAR Project and recorded using the Microsoft Teams platform and transcribed verbatim. The data from the interviews was thematically coded using NVIVO, a qualitative data management software programme. Thematic analysis was then used to analyse the data and organise the findings of the research.

Phase 3: Two focus group interviews took place with Access Practitioners at IT Carlow and Waterford IT (see Appendix 4 & 6 for both interview guides). Interviews were conducted by Dr Rebekah Brennan and Aoife Horgan of the SOAR Project and recorded using the Microsoft Teams platform and transcribed verbatim. The data from the interviews was thematically coded using NVIVO. Thematic analysis was then used to analyse the data and organise the findings of the research.

3.4 Limitations

Although a sizeable amount of survey data was collected for the TtT approach, this mixed methods research was limited by the small sample size who self-selected for qualitative interview. The dataset for the ATTAINS programme consisted largely of data collected from professionals who delivered the training, and data from students who attended the training was limited to ten survey responses and one interview. It would have been preferable to have collected a larger dataset from the trainees of the ATTAINS programme. Nevertheless, professionals were able to speak to the impact of the AT training through their engagement with students. The research took place during the COVID-19 pandemic and was significantly impacted by the associated restrictions on IT Carlow and Waterford IT, as with all higher education institutions nationally, regarding maintaining contact with

14. Contact www.soarforaccess.ie for sample surveys.

students who have complex needs. It is possible that interviewing the families of students who access AT in education would have added a different perspective to the evaluation. Unfortunately, it was beyond the scope of this particular piece of research. Nevertheless, this report is a useful evaluation of two models of AT training in development stages, which contributes to our knowledge of AT training models and which can be drawn upon to inform future iterations of similar programmes.

CHAPTER 4

Findings

TtT Model of Practice

4.0 Introduction

This chapter will present the results of this evaluation in relation to IT Carlow's TtT model. Results include survey data and data collected from qualitative interviews with professionals. Results are organised thematically as follows: collaboration and partnerships; adequacy and usage; impact; challenges and opportunities.

4.1 Collaboration and partnerships

From the beginning, stakeholder relationships with schools, education centres and educators of all types were essential to the successful rollout of the TtT programme. The first step was to establish a relationship with the post-primary schools. Raised awareness of Universal Design for Learning (UDL), Continuing Professional Development (CPD) and the acquisition of digital badges were found to be motivators for initial engagement:

> *'Trying to get into the schools was the biggest and the time spent and the energy … you know the AT was slightly different and so we were coming from a different angle … It is probably – the UDL is more … Let's see this is 2019 and we are now 2021 – UDL really came to the fore last year, really, in terms of digital badge. We offered a suite of CPD for teachers.'* FG 1, Professionals

The next stage for the programme was to engage the education centres.[15] Presentations were given by the team as part of the recruitment process. A 'snowballing' effect was utilised here, where one education centre agreed to facilitate training, and this led to other centres becoming involved through word of mouth:

> *'So, I suppose the presentation was everything – that was it. You had to sell it, but it was easier to sell because we had already done the schools, you know, and we knew what we were up against. And then once [NAME] came on board, it was easy – again like the schools – to sell to the other two. We start the conversation "we were working with [NAME] Education Centre" – that was it – there was your carrot – it was done and dusted.'* FG 1, Professionals

Overall, the programme was something that was embraced by most schools and education centres that were approached:

> *'… that was my role – basically to go ahead and get that up and organised and then to contact the schools, contact the education centres, organise the memorandum of understanding through our boss, [NAME] – and obviously [NAME] – and our registrar, [NAME]. So that was all signed, done and dusted. It allowed us to have a lot of leeway with the education centres. So, we provided the programme and we rolled out the programme, facilitated it and everything … the success of that really was because of the mood that we signed with them because we ended up having a kind*

15. See https://esci.ie/ for information on Ireland's education centres.

of a relationship – every one of us – with those involved, you know the directors of education in all the areas and the admin staff – everybody. Everybody was involved in it because it was a new kind of an area and that and it was all very exciting.'
FG 1, Professionals

'When [NAME] – when the email came in, I jumped at the chance. Oh my God, this will be brilliant. It just came in out of the blue and it was great, yeah, just what we needed, and we were all delighted with it. There are about five of us in Special Needs mostly that make up the team and we were all delighted with it actually.'
Interview 4, Professionals

The data from qualitative interviews with professionals who had used the TtT programme at their workplace also indicated that collaborative partnerships were an important factor in the success of the programme:

'It is a great opportunity even to go to the IT to see where the Access officer is and be able to identify and see what their role is and be able to tell our students then, when it is their time for going on to third level, being able to advise them properly instead of half saying well I think it is this and I think that and they do have an Access officer and your form will get to them and they will know about you. We are just presuming these kinds of things, but it is good to go over there and just link in properly and talk to them.' Interview 3, Professional

Previous work by the SOAR Project found that established connections with HEI Access Practitioners is important to educators in encouraging students to progress and transfer future benefit, not just delivery of the programme (Cummins et al., 2021). It was agreed between the programme team that ideally, higher education outreach programmes and education centre directors could play a stronger role in the development of collaborative relationships:

'… a greater role I think in that … I suppose from an education centre's point of view – if all of the education centres were linked up or had an agreement or an understanding with a third level institution or a further education institution. Just talking about education centres that, if at their monthly meetings of education centre directors, we had an input from somebody in relation to Assistive Technology, I think that would give us that little boost.' FG 1, Professionals

4.2 Adequacy of training programme

This section will present the findings of both the survey and interview data in terms of the adequacy of the TtT model as it currently operates through raising awareness of AT devices and improving proficiency in use of AT in trainees. This section of the report will also provide some information on the demographics of the trainees: e.g., gender and roles within their organisation, as professional roles relate to how effective the programme was experienced by research participants.

4.2.1 Demographics

Forty-two responses were collected from the survey issued to trainees. Of these, 100% identified as female:

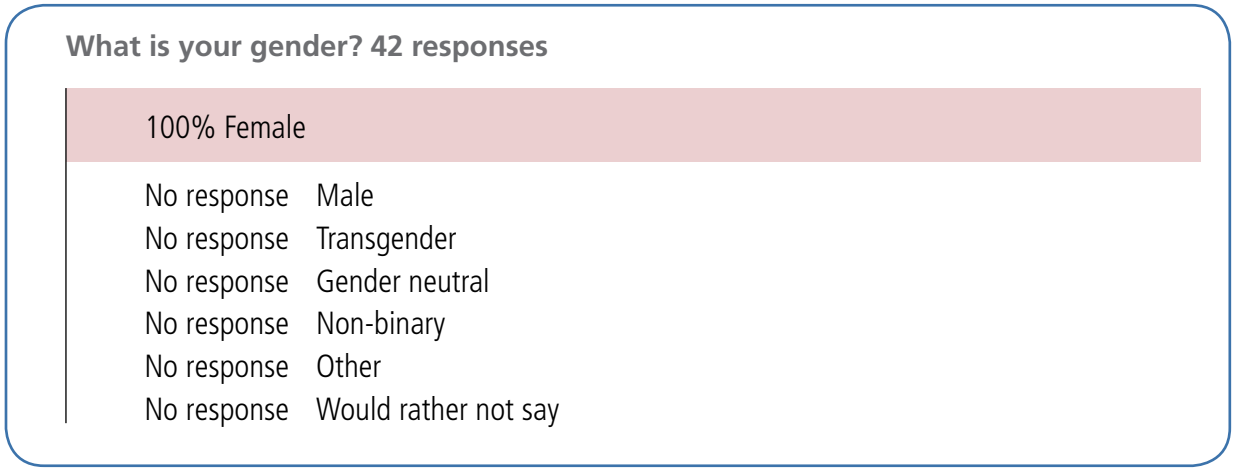


Figure 1: Gender of survey respondents

This finding is in line with recent literature which suggests that the majority of post-primary teachers tend to be female (Carrol, Parasis and Tani, 2021). However, we were able to interview two males as part of the IT Carlow data collection which represented 50% of the professionals who took part in qualitative interviews. Data was also collected on the diverse roles that were represented in this survey research:

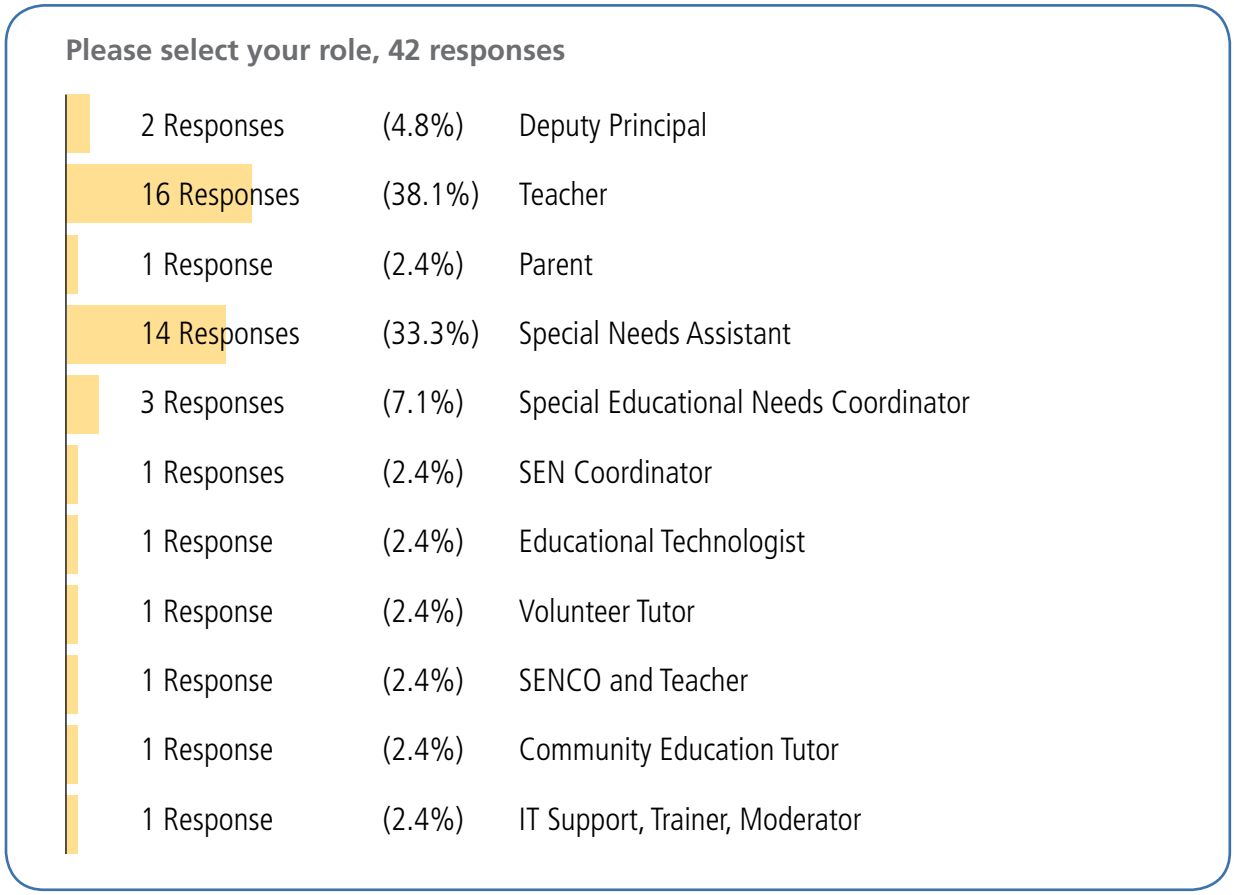


Figure 2: Professional role of survey respondents

As shown in Figure 2, the majority of survey respondents were post-primary school teachers and special needs assistants. Due to the small number of interviews conducted, the roles of those interviewed cannot be disclosed to protect their anonymity.

4.2.2 Prior awareness of AT

Awareness of AT prior to training was also assessed in the survey. This information has value in terms of assessing the collective knowledge of AT professionals, prior to taking part in training, so that levels of knowledge afterwards can be compared and used to make a judgement on efficacy of the training model:

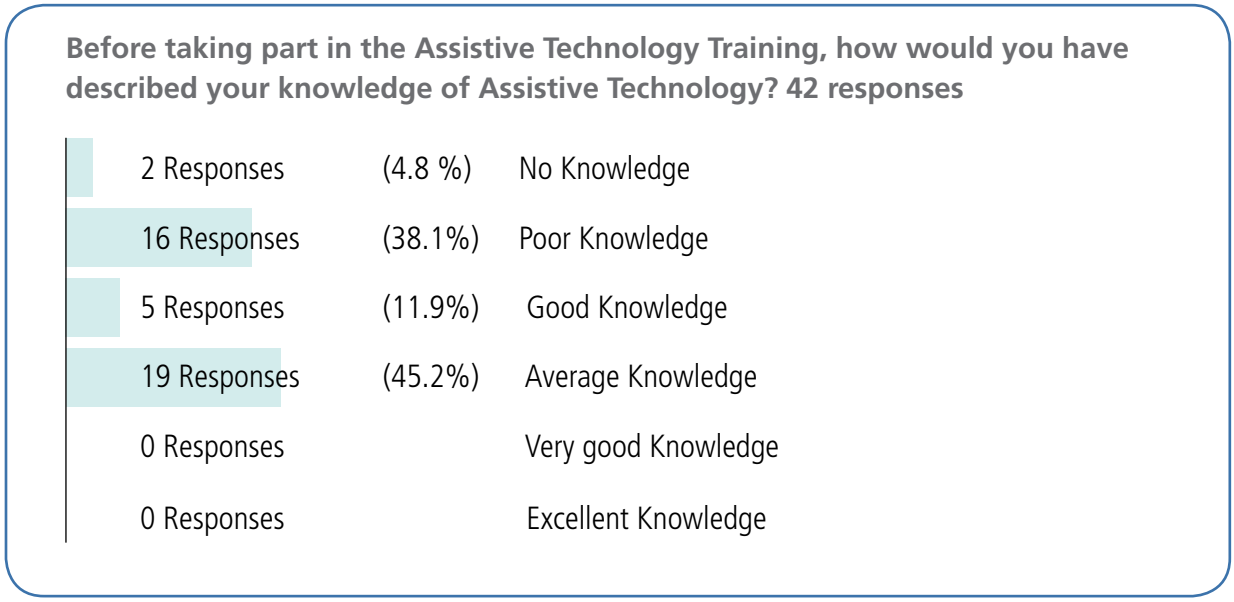


Figure 3: Knowledge of AT prior to TtT training

As shown in Figure 3, prior knowledge of AT was largely reported by survey respondents as being average or poor. No respondent identified that they had very good or excellent prior knowledge of AT before the programme. This is in line with the extant literature which reports that knowledge of AT amongst educators generally is insufficient (Munyoroa, Machimbidzab and Mutulac, 2021) and likely to be attributable to lack of training. In the interview data, one professional participant reported a low awareness of AT, but also of IT in general, prior to the training. As described in the illustrative quote below, consultations were conducted prior to training to assess the needs of particular schools/education centres:

> '… there w*as a bit of consultation beforehand on what would work for us.*
>
> *ACCESS PRACTITIONER is brilliant, and she comes down to the level – that I was at anyway – IT. Sometimes I find when you have some of this IT training – Jesus, it is on a level way up and you are there "Oh, my God" and it is lost.*

Like the very first day I think we went down to the college to her and she went through Read and Write[16] with us – that was brilliant – and then I think, for the next couple of sessions, she came up to us in the school. And things that we should know, but I didn't know, oh my God that is after being a lifesaver, especially with the online learning. We have used that so much.' Interview 1, Professionals

'Now obviously there were different competencies around the participants – I think there were about 20 participants at the workshop on the day. There would have been different understandings, knowledge, competencies and requirements from different people to kind of go "hey, that is interesting" – you know what I mean?'
Interview 3, Professionals

Another question asked of survey respondents was whether they had ever used AT before the TtT programme:

Before starting the training programme, had you ever used Assistive Technology before? 42 responses

20 Responses	(47.6%)	No
22 Responses	(52.4%)	Yes

Figure 4: Use of AT prior to TtT training

As can be seen in Figure 4 above, a small majority of survey respondents had used AT before, despite the low level of awareness reported in the survey dataset. Use of AT does not necessarily signify appropriate use that meets the individual needs of the student, despite the best efforts of educators. That requires a sufficient level of awareness of what devices and products are available to meet a student's needs. As found in Zilz and Pang (2019), a lack of teacher training about AT and competence in aligning AT products with individual student needs acts as a barrier to integrated AT usage in the classroom.

Survey respondents who reported previous use of AT were asked to list what types of AT were used, which included: hearing aids; software to support students with dyslexia; Windows 10; C-Pen; Speech to Text; Microsoft Learning Tools; iPad; Immersive Reader;[17] Braille tablets; SeeSaw;[18] Aladdin;[19] Word dictation; screen recorders; Touch Type Read and Spell software;[20] Microsoft Teams; Photomaths[21] and Grammarly.[22] This diverse list of products reported to be in use before training commenced is an indication of the range of AT devices and products that are available, which educators, schools and HEI settings

16. Read & Write offers a range of support tools including: Text-to-speech to hear words, passages, or whole documents read aloud with easy-to-follow dual colour highlighting; Text and picture dictionaries to see the meaning of words explained and others.

17. The Microsoft Immersive Reader is a free tool, built into Word, OneNote, Outlook, Office Lens, Microsoft Teams.

18. Seesaw is a classroom app which aims to keep students engaged and connected in class, distance learning, or in a hybrid learning environment.

19. Primary school administration software.

20. Touch Type Read and Spell is a course that students can take, with multiple modules, immediate feedback, and a focus on literacy skills..

21. An app to assist in learning mathematics.

22. An app to assist with writing skills.

are required to navigate in order to identify the right ones for their students (World Health Organisation (WHO), 2019; Nordstrom et al. 2015). The data from the qualitative interviews indicated less prior use of AT. Although findings from such a small sample size cannot be generalised, the following quote gives an indication of what some schools were experiencing in relation to prior use of AT:

> *'… the teachers were at sea – this is all teachers I suppose really. They were at sea in terms of what was out there, what was available, and they couldn't get over the stuff that they had at their fingertips and they just weren't aware of – that was huge, that was massive.'* FG 1, Professionals

4.2.3 Learning accrued through training

Survey respondents were asked to rate their knowledge of AT after training:

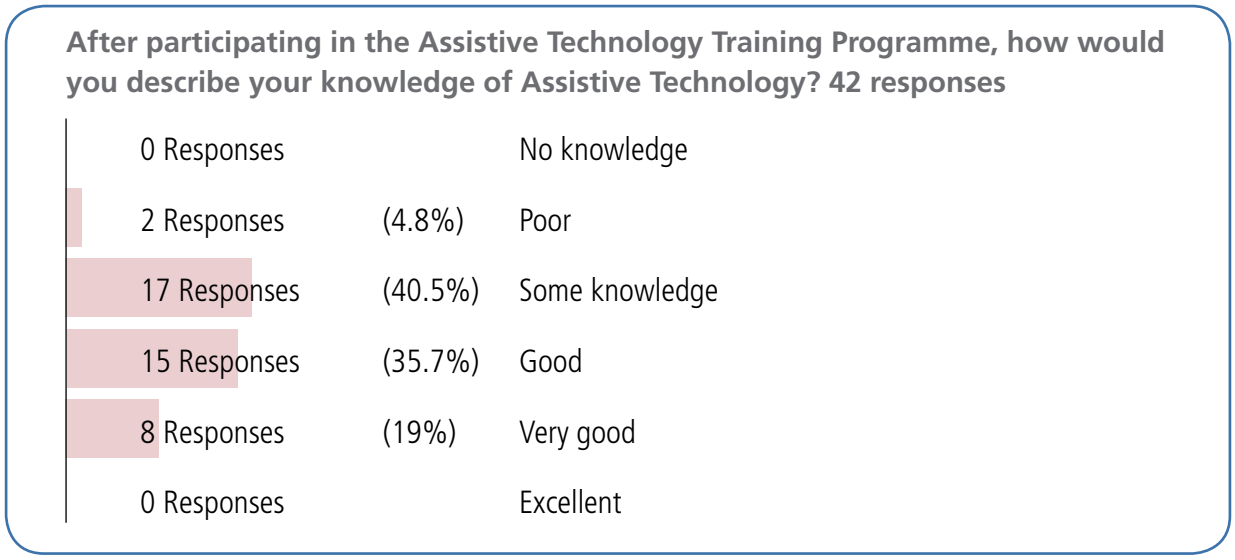


Figure 5: Knowledge of AT after TtT training

A clear improvement can be noted here when compared to knowledge prior to completing the training course, which was largely described as average or poor (see Figure 3). In Figure 5 above, it is evident that the majority of respondents felt their knowledge of AT had improved: 40.5% reporting some knowledge accrued, 35.7% reporting a good level of knowledge accrued, and 19% reporting a very good level of knowledge accrued. In total, 95.2% of respondents reported that learning had occurred during the AT training course. This is an encouraging finding. Enhanced knowledge of AT in general was also evident as having improved post-training in the qualitative interviews:

> '*[NAME] did – after the first workshop – she disseminated something like Grammarly or something like that – and you had to have a special code to get on to it – so we wouldn't have been able to get on to that and distribute it to our learners without having done the workshop and then it was flagged "look, there is a particular resource – it is available within the institute" and then that could be pushed out to our learners – so that was beneficial. There were other, of course, free things that*

come with Microsoft 365 or whatever which would be standard technologies – it was just really about the knowing of the fact that it was there and it could be used.'
Interview 3, Professionals

'I think that Assistive Technology – to a large extent, if you were to ask the average post-primary or primary teacher of mainstream class about Assistive Technology, they would be thinking hearing and visual and that it is something to improve hearing and probably something to aid vision, I think. And I think it is trying to get to breakdown that barrier for the kid that has huge challenges in terms of dyslexia, that that child – if they come back after their summer holidays and they are asked to write an essay or write a page on what you did for the summer – the kid that will have serious challenges with actually getting the thoughts down onto the paper. If they had the likes of Live Transcribe,[23] they would possibly tell a far better story than the child who is very eloquent in their writing but sat in their room all summer, you know.'
Interview 1, Professionals

'So, there were different … Like I said before, because it was the whole of the Education Team – and not everybody was involved in lecturing – so there were different … I think there is a huge value in the whole team being aware and coming forward with taking on the whole thing so it becomes a tool that we use and we all know about. Other people found it – a lot of the feedback was generally very positive from the participants – that they all felt they had learned something.'
Interview 3, Professionals

'Oh yeah absolutely because [NAME] went through a load of stuff with that Read and Write now that I didn't even know existed. Like she brought the Reader Pens with her and we were able to look at them, try them out, take photos because there were the two different types. Yeah, there was no problem that way at all – all that was good.'
Interview 2, Professionals

4.2.4 Helpfulness of AT training programme

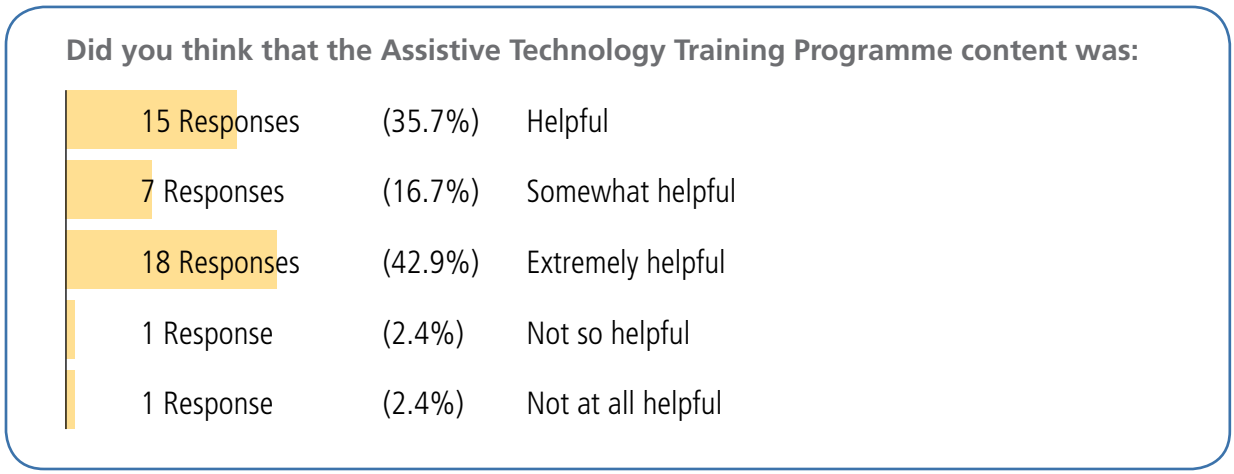


Figure 6: Helpfulness of AT TtT programme

23. Live Transcribe is a smartphone application to get real-time captions developed by Google for the Android operating system.

Post-completion of AT training, the majority of respondents (as depicted in Figure 6 above) reported finding the training either extremely helpful or helpful (78.6%). There is a slight discrepancy in findings between knowledge and helpfulness which is of interest. However, qualitative responses from the survey may shed some light on why although knowledge of AT had increased, the helpfulness of the course was not rated as highly:

> *'I felt fairly confident at the time but would need class time to practise on students.'*
>
> *'The students I work with don't need Assistive Technology.'*
>
> *'I think the programmes introduced were not relevant to a primary school child.'*
>
> *'Lots of the content wasn't relevant for my situation.'*
>
> Survey Respondents

From these survey quotes, a logical conclusion can be drawn that some respondents, as educators, were employed or situated in scenarios where the AT course was not particularly suited to their subjective contexts or students' profiles, which may include a lack of face-to-face classtime with students due to COVID-19 restrictions. The helpfulness of the AT programme was also discussed in qualitative interviews:

> *'… I think it was hugely beneficial and, one, the hands-on approach – the actual individual learning that we all got out of it and the putting it on the page as well and bringing it more to the centre to say that these are things that should be used on a daily basis because it is so easy to forget about these things. I think by and large the vast bulk … of the 20 people who participated in the first workshop all came back and said they got a lot out of it; so, I think it would be hugely beneficial. I would love to continue it ...'* Interview 3, AT expert
>
> *'But that whole notion that … It was an eye opener for myself and I think, if it could be used to open everybody's eyes – we will say across the education centre network because you get the potential to reach out to every single teacher in the country.'*
> Interview 1, AT expert

After completion of AT training, 'yes' and 'maybe' were the most commonly given responses (83.4%) to the survey question 'After completing the Assistive Technology training programme, can you use the technologies/learning strategies without support?' This indicates that the course supported self-efficacy and increased confidence in using AT amongst trainees. Where 'other' was selected, the response was 'yes, but refer back to my notes taken at this and other courses to remind me how to use or set up things that I haven't used in a while'.

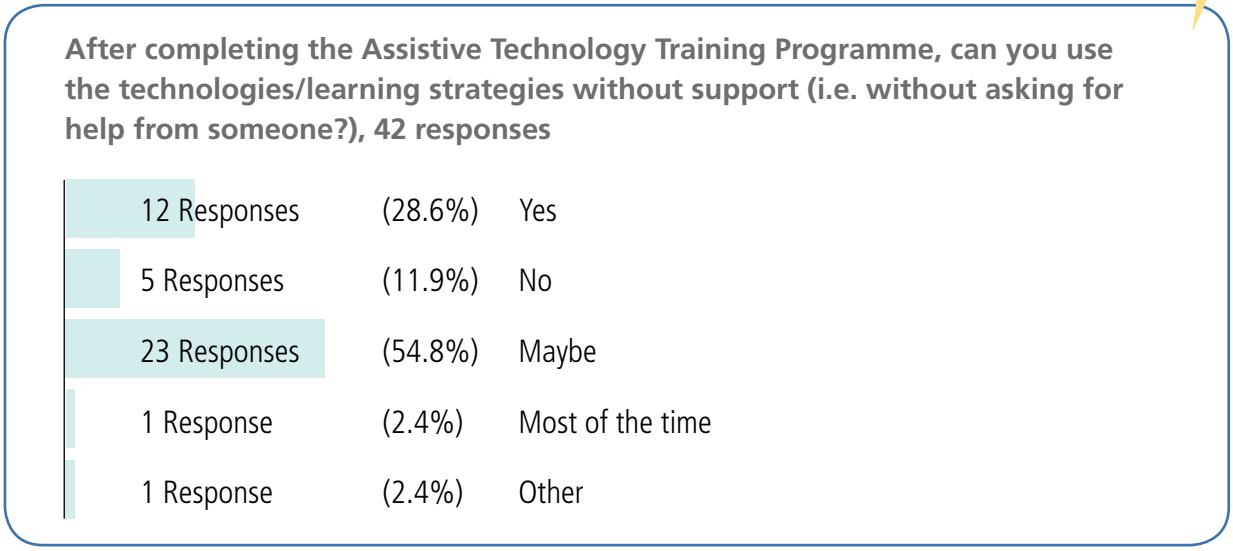


Figure 7: Using AT without support post-training

Respondents were also asked what they liked most about the training programme. Qualitative responses included those presented below:

> *'I really enjoyed how interactive the course was and that I got to try out all the different technologies.'*
>
> *'Very easy to follow and to understand.'*
>
> *'Money is tight in most learning support departments. I liked that we were shown some of the freeware that can do some/all of the more expensive software available making it more applicable and useful to bring back to our students/schools.'*
>
> *'Unfortunately, there were delays in the programme session due to [a] technology glitch, but the facilitator showed great enthusiasm for her subject. Because of time lost, she was very anxious to inform participants on what was available and the benefits of same. Very good information was passed on as regards options on available software, some of these at no cost, and some at cost.'*
>
> Survey Respondents

Perhaps most salient to the adequacy of the TtT model of practice is whether the training course was tailored to the needs of the students with diverse abilities. Findings as presented in Figure 8 show that 78.6% of educators felt that the training programme did reflect the needs of their students, with a further 14.3% indicating a 'maybe'. This leaves a small minority of 7.1% that felt the course may not have been tailored to the needs of students. Where 'other' was selected, one respondent stated 'It would depend on the learner – some of my learners would light up like stars when working with technology and others would just freeze.'

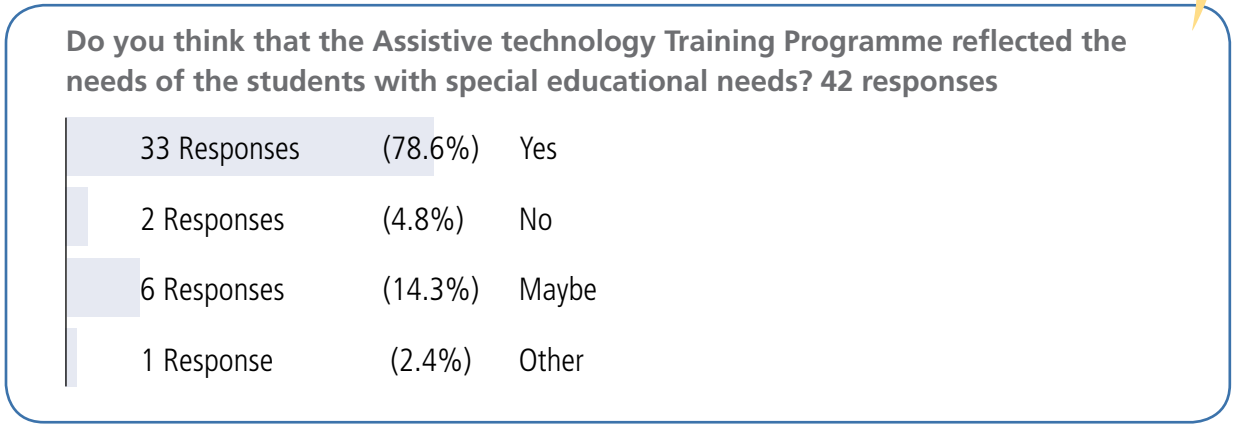


Figure 8: Met needs of the students with diverse abilities

Data from the qualitative interviews indicated that diversity of need in student cohorts made this a difficult item to pinpoint:

> *'Well, I suppose – like what I would say to that is that, in terms of any kind of learning, it is always good to bring the learning into the personal before you propagate it or dissipate it out into the world around you. So, it might have been good to have had some kind of focus on individual need which really gets people to think about, you know, the value of it. Because if you have learned how something is a value to you, it is easier for you to put the effort in and try and push it out to other people and you might have a greater understanding of who it might be of value to as well. Now we had a very disparate need in the group – it was a large group of 20 people.'* Interview 3, Professionals

> *'Absolutely, yeah, definitely with the kids we would be working with. Now another issue – you can look at that as kids – we would have big classes of learning support in some years and it kind of defeats the purpose in that way that they are all on different levels. Some would require more intensive things like Immersive Reader, the Pen – and others are well able we would say to read. It could be comprehension, it could be something completely different; so that is something that I know is probably more of a school issue, that we need to even split classes again depending on the time available and the timetables and all that as well.*
>
> *Yeah, it is great to have, and it is really necessary for the students but, again, I think it is our problem that we have to try and get them into groups that would need that together and groups that wouldn't need as much of that IT intensive training – that is something we need to look at, yeah.'*
>
> Interview 4, Professionals

Lastly, adequacy of the course delivery was assessed through survey enquiry and interviews. A large majority of survey respondents (90.5%) reported that they felt they had received enough support from the training facilitator:

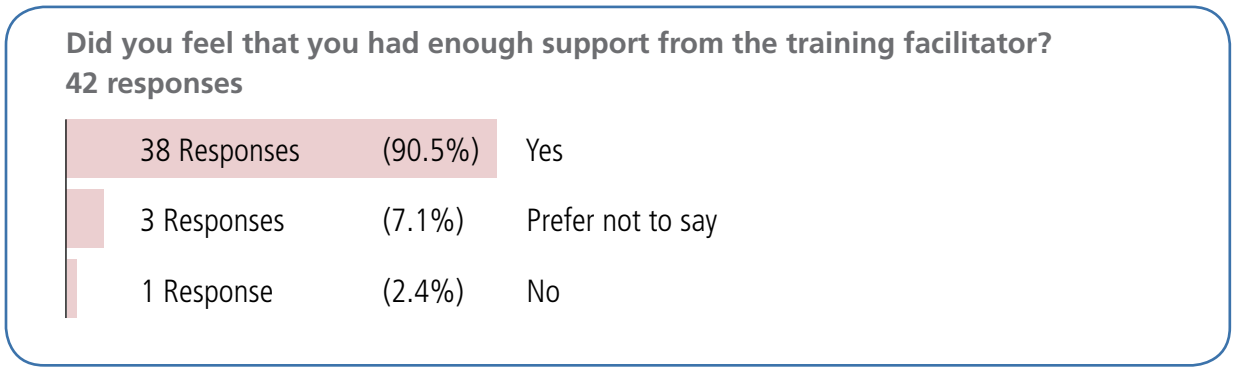


Figure 9: Support from training facilitator

Other comments relative to the adequacy of the course approach and delivery were indicated in the interviews, as illustrated by the following quotes:

> *'I think the TtT approach has been key to reaching more students because, through that, the teachers can work with students they have; so, it has definitely been a win–win. Looking back at the feedback … for the most part I would say 90% of them were really positive.'* FG 1, Professionals

> *'There was a lot of participation, a lot of openness, a lot of space for people to engage and bring up their own questions and then for the group to critically think about what exactly all of these new ideas meant and then there was hands-on individual training as well at the same time. It was interspersed nicely so I think everybody felt, over the period of the workshop, that we were all doing something positive. Let's face it, you go into a workshop and you are kind of going half the time, "am I going to get anything out of this?", you know, and are you going to get a chance to participate as well; so, it was very participatory, which was great.'* Interview 3, Professionals

> *'Everyone was delighted with it … Just everything – it was a comfortable atmosphere, and nobody had any problem asking questions or trying or go back on that or, you know, it was grand – it was easy, comfortable, yeah.'* Interview 4, Professionals

4.3 Impact

Despite the relatively short-term lifespan of the programme to date, a certain amount of impact can be initially measured at this stage. Measures used to assess impact on educators during data collection (via the survey instrument) consisted of questions about self-reported levels of skills acquisition; impact on teaching methods; levels of confidence using AT after training and integration of AT into the classroom. Survey results are presented below:

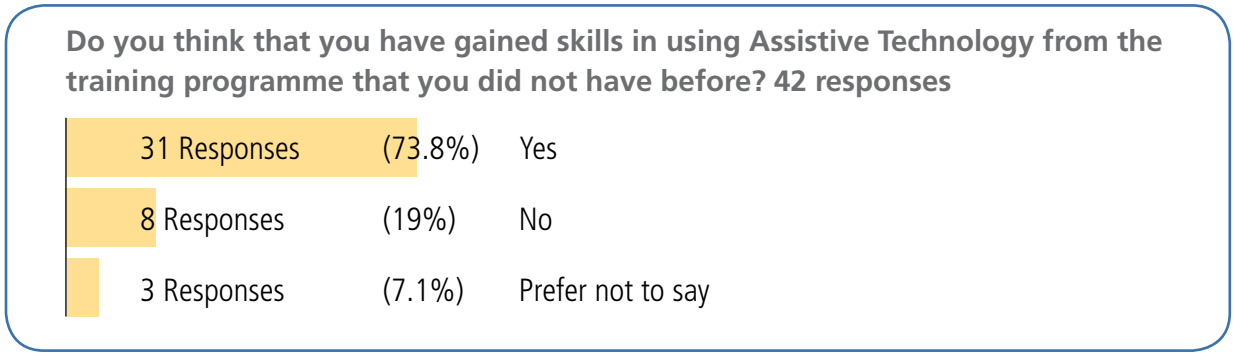


Figure 10: Skills acquisition through TtT training

A majority of survey respondents (73.8%), as presented in Figure 10 above, reported that they felt they had successfully gained new skills through taking part in the AT training course.

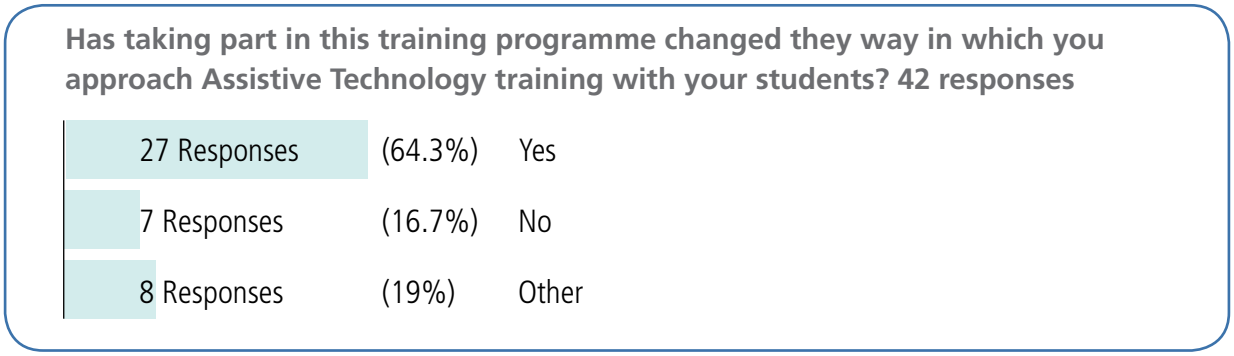


Figure 11: Changing AT approaches with students post-training

The results from asking educators whether their participation in the AT training course changed the way in which they approached AT training with their students are presented in Figure 11. A majority (64.3%) responded that it had. Amongst the remaining responses, 16.7% stated that no, the training course had not impacted on the way they approached their AT training with students. 9.5% had yet to apply their skills, perhaps due to lack of opportunity or access to students. One participant stated that they would prefer more hands-on support than is feasible through a webinar delivery.

Has taking part in this training programme changed the way you integrate Assistive Technology in the classroom? 42 responses

21 Responses	(50%)	Yes
9 Responses	(21.4%)	No
4 Responses	(9.5%)	No opportunity yet
3 Responses	(7.1%)	I would further training first to make strategic for the Dept.
1 Response	(2.4%)	I can only go by what the teacher requires
1 Response	(2.4%)	Haven't had chance yet with school closures
1 Response	(2.4%)	Haven't yet had opportunity to try out properly due to Covid
1 Response	(2.4%)	Not a teacher
1 Response	(2.4%)	I try my best. Does not always work

Figure 12: Integration of AT into the classroom

From Figure 12, it is clear that a majority of educators have changed the way they integrate AT into their classroom post training. From the qualitative responses gathered through the survey instrument, some additional information adds depth to this finding:

> *'I am a Special Needs Assistant. I don't prepare lessons.'*
>
> *'As the learner I was working with has poor literacy skills, I am no longer working with him, due to COVID restrictions, but looking forward to future tutoring when that happens.'*
>
> *'I am more informed as to what technology will benefit students.'*
>
> *'It is the inclusion of a combination of Assistive Technology features that helps for differentiation.'*
>
> *'I try to use some of the resources available to me and also when applicable build into lessons time and opportunity for my students to practise using the various different technologies available.'*
>
> Survey Respondents

Earlier in this report, information was provided on the diversity of roles within the survey sample (see Figure 2). The quotes above speak to why some respondents would not be in a position to integrate AT into the classroom, whereas others found that the training allowed them to broaden their use of devices and technologies:

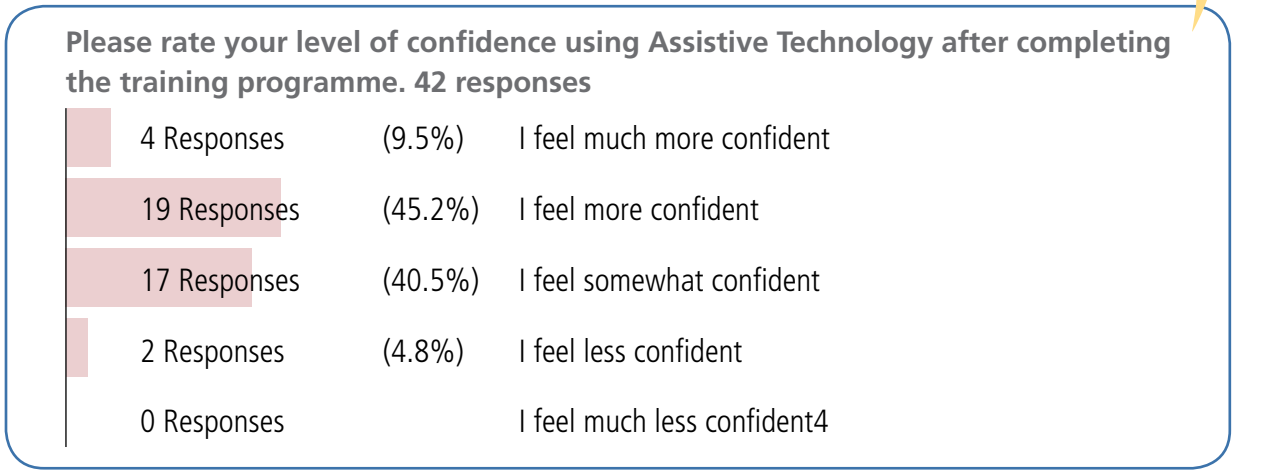


Figure 13: Confidence using AT after completing training

Increased confidence was evident in a large majority of respondents (95.2%) when using AT in the classroom. This is an encouraging finding as previous research has shown educators' experience of using AT in the classroom was found to be positively influenced by confidence and comfort (Liu et al., 2017). In terms of impact, the small number of interviews that were conducted with trainees limited the qualitative dataset, due to participants' subjective roles. However, some comments highlighted below reflect the positive impact of the AT training for educators and for students:

> *'It is unbelievable – it is brilliant. This other chap now that is in third year – he would be very dyslexic now and he finds it just brilliant, and he has loads of stuff in his head. He just puts on his headphones and off he goes talking, you know. We don't worry – we edit it later – and there is not the same stress on him then trying to … Because if you have somebody sitting there beside you spelling out words to you and all the rest – especially if it is English – or if he is writing something and a thought comes into his head and it is flowing – but if he was to stop every couple of seconds for someone to spell it out for him to write it, you know … So, it is brilliant for that now.'* Interview 1, Professionals

> *'The students are like sponges really. They pick up so quickly especially when they are younger. Most of them – even our lads here now that would have difficulties – are quite good on it overall once there is someone, you know.'* Interview 2, Professionals

Universal Design for Learning (UDL)

As already described in Chapter 1, UDL is a framework of principles and guidelines for a service or practice that does not exclude any particular groups of learners or their learning styles (Home Office, 2016). It supports models of practice where teaching and learning is dynamic, flexible and accessible to all. AHEAD (2021) have acknowledged that there is a significant amount of higher education students with disabilities who have not made a disclosure or accessed any supports. This may be due to a lack of diagnosis, or for another reason that may be personal to that student. Therefore, all students can benefit from a UDL environment, where they could also access services that are designed to support a wide range of neurodiverse students (Gillespie-Lynch et al., 2017). This is illustrated by the quote below:

'For me, the really big thing is to position Assistive Technologies as not being something that is required for people with special needs. It should be positioned as something that we can all avail of, that we all need and we all use certainly from the point of view of, say, differences in competencies of different learners. If you take any average group of learners, some of them will be more competent than others in terms of digital technologies so, obviously, something like Zotero or something like that – there is an Assistive Technology. People struggle with trying to put references on the page or especially when they start doing their PhDs they get completely lost because they just have a big bank of stupid references somewhere that they can't even find; whereas if they had started using Zotero from the get-go maybe they would have a bit more [unclear]; so they are all Assistive Technologies – you know what I mean?' Interview 3, Professionals

'I have one student now in particular that is doing History so I am able to upload some notes for him and he is able to put on his headphones then – because he learns so well by listening – and have it read to him. Now he is always messing in fairness – he would come back to me and say "I put it on the high speed" – and he has a bit of a laugh at that – but it is working and his mum told me it is working for him as well.' Interview 2, Professional

'Like there were schools – no mobile phones and that. I think that very, very few kids would be in the position now that when they are in the school building anyway that they wouldn't be able to get access to a device. I think that it would be very likely that every child could get access to a huge range of Assistive Technology. Not all of it – some of it is so specialised – but I do think yeah that there will be less fear of technology in the classroom and I think that would be of huge benefit.' Interview 1, Professionals

4.4 Challenges and opportunities

Data was collected on challenges experienced by trainees who took part in the TtT AT programme. Firstly, the cost of AT devices and technologies was discussed during the qualitative interviews:

'I think the free software as well because the cost is often a problem. So, it was pretty obvious then fairly quickly what we needed so a lot of research done then around different Assistive Technologies especially what came to the focus was freeware – nobody wants to pay for their hardware or software if they can help it. So, freeware and accessibility features that are already on systems and then just on those that suit the individuals especially on the iPad, etc. So, the whole thing of the Assistive Technology is research. I think initially lots and lots of research around what is out there, what is available, be it paid ware or freeware but particularly freeware. And the focus on freeware simply because of the lack of funding in schools for Assistive Technology – that is huge.' FG 1, Professionals

'Sometimes somebody might be downloading and they can't get in and "is that the free one or is it not?" – just too much hassle.' Interview 1, Professionals

'They seem to have very good equipment and maybe they are financed very well in third level. They seem to have a lot in place – more so even than second level – because with second level if they have equipment we have to send the child, get a referral to the OT, the OT has to state that they require it for x, y and z, we apply to our SENCO, and she will either grant it or she won't. It is a big rigmarole for us.' Interview 3, Professionals

This is in line with the literature which states that the expense of AT devices can be problematic for institutions and may even exclude people with diverse abilities from gaining access to the products that they need (Lyner-Cleophas, 2019; Visagie et al., 2016; Atkinson and Castro, 2008). The findings from this project suggest that the use and adoption of AT can be correlated with the accessibility and costs of software, with a sector-wide promotion of freeware seen by research participants as potentially integral to overcoming financial barriers to engagement.

One survey question asked revealed that the majority of survey respondents felt that they did not have sufficient time during the course delivery to practise using the AT devices:

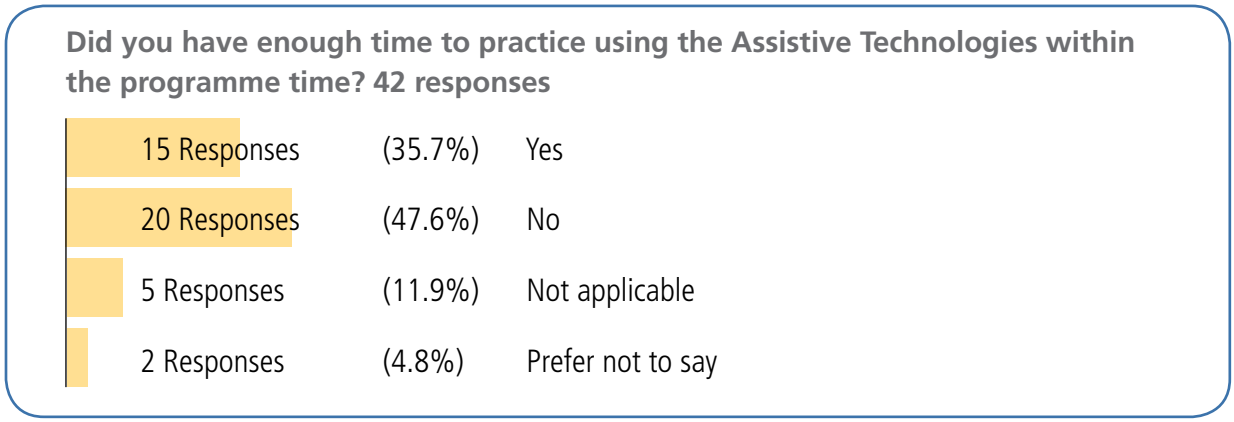


Figure 14: Time to practise using AT devices during training

The sense that the training programme was impacted to some extent by time constraints was expressed also by one interviewee:

'I suppose the only thing improving would be the time, so the rushing. I would have – I know [NAME] had a half day and I know she is under pressure for time as well – but even if we could allot a day, you know, and just say "listen, we are gone for the day" and [NAME] books that day and we spend the day doing the bits that we would have done in a half-day but we would have time to do it properly – you know that kind of a way. Just, as I said, the time constraint was the big thing.' Interview 3, Professionals

To identify other challenges, qualitative, open-ended questions were asked within the survey instrument so that respondents could explore the obstacles that they encountered during training without restriction. Quotations below are taken directly from survey responses:

'I found it too difficult.'

'As this training was 14 months ago, my memory of it is limited. I did my best to recall the training. My one lasting memory, however, was not having enough time to try it out and the tutor not having enough time to support me.'

'I attended the training as an assistance to my work, a volunteer face-to-face tutor, working with a learner with very low literacy skills. He has an Android phone which he uses to take and make calls. From the course, I was looking forward to gaining knowledge and skills that would help him improve and get more value from his phone. Unfortunately, COVID entered the equation and face-to-face classes ended. Posting work was not successful.'

'There was a lot of information to process during the course. I feel it was assumed that all participants are tech savvy, I am not tech savvy so a lot of it went over my head. There was so much info, given quickly in every session, it was hard to take it all in.'

Survey Respondents

The responses above indicate that more time is needed for practical application of technologies learned. They also indicate that an audit of needs is vital in advance of training, and additional support provided for teachers engaging in training. A follow-up to ensure the learning is adopted after training can also be identified through these responses.

Survey respondents also provided many valuable suggestions as to how the TtT AT programme could be improved. Again, these were collected through qualitative and open-ended questions in the survey instrument to allow for free and unrestricted responses:

'I think the course should be split between people who have good technology skills and people who have basic computer skills. The basic group course should be given at a slower pace and be simplified so that everyone can understand each element.'

'I think it would be helpful to have videos to watch re. how to use the different assistive technologies that the course teaches, so we can look at them to remind us how to use them, etc., if we need to. Not all schools have these technologies and it might be hard to remember how to use them if it's months/years after doing the course that they are introduced into our school setting. If there was a video library that we could access whenever we needed to, I would personally use it and find it very helpful.'

'Any new or emerging technologies … as it is essential now more than ever when both staff and students are online and classes more than likely will be this way for 21/22 semesters.'

'I would like to hear about more available tools free of charge or with a discount.'

'Free reader pens for participants!'

'Allow for more interaction with technology when doing the course.'

Student respondents

Some suggestions for improvement in the interview data included:

> *'I think more participation. I don't think people mind and I think a lot of the time – especially in the webinar format – they are sitting in a room watching somebody doing all the work, you know, and I think that if there is sort of a participation – a non-threatening participation that doesn't require you to – some people are so self-conscious anyway – but just in such a way as to have a very non-threatening, safe participation in the delivery of it. And I think the sharing. I do think that if there was a follow-up – I think follow-up is probably one of the most important things.'*
> Interview 1, Professional

> *'I think so just to have a little bit of a link kind of nearly a transition from second level to third level would be great as well to see where we are both coming from as well. That we are preparing them for third level.'* Interview 3, Professional

When asked about the biggest challenge in running the AT training programme, the team responded that the initialisation of the project and establishing essential connections was difficult:

> *'I think the biggest challenge was the initial getting into the schools. That definitely was hardship and a fine line, as I said, between harassing them and actually getting them on board, a very fine line at the beginning because if you overstepped the mark then they just get sick of looking at you and they just block you or whatever.'*
> FG 1, Professionals

> *'I think one of the things that would be – I sound like a politician now when saying "something should be done about this" – but it would be great if there was a centralised resource. If there was a centralised resource – like that hub again – for Assistive Technologies. If there was, whatever, an ETB, an education centre, a college, an organisation – in a non-profit, non-self-promoting sort of a way that this is just something that we do – and if there was a centralised go-to location where you would say, if you want information on Assistive Technology, go to at.ie and that is hosted by whoever, you know – something like that.'* FG 1, Professionals

Challenges related to COVID-19

The current climate of the COVID-19 pandemic was discussed in qualitative interviews as a challenge:

> *'So, the construct of the TtT worked really well but I was just kind of putting a caveat in there because it didn't continue as a result of COVID-19, it didn't pan out to the final … we only got off on the starting blocks and then it came to a crunch. I think that was more to do with less to do with the technologies because, obviously, we could have met as a team further down the line but there was so much disruption in the early days of COVID-19.'* Interview 3, Professionals

> *'The other thing was I think the learning within the classroom in a face-to-face situation – now no COVID right – in a workshop situation. The learning within a*

classroom is completely gone online for that reason because, when you are in the classroom – say somebody said to me "oh I used that app already" – one of the teachers. So I will say "would you mind sharing with the rest of the group how you use it and who you use it with" – there is a huge learning in that – that is all gone – that is the pity of it – that is gone.' FG 1, Professionals

'Maybe in September – we said we would get back to her – but we just couldn't justify either because some of our students have missed so much time so we couldn't really justify getting in a sub when we should be teaching them after missing so much time. I know we were online but it is not the same, it is not the same.' Interview 2, Professionals

One question which was specifically asked of survey respondents was whether training should be expanded to include educators of primary school children. This survey question was based on scientific evidence that early intervention yields the best results (Satterfield, 2020). 90.5% of respondents agreed that this primary school cohort should be included in a TtT AT programme (see Figure 15):

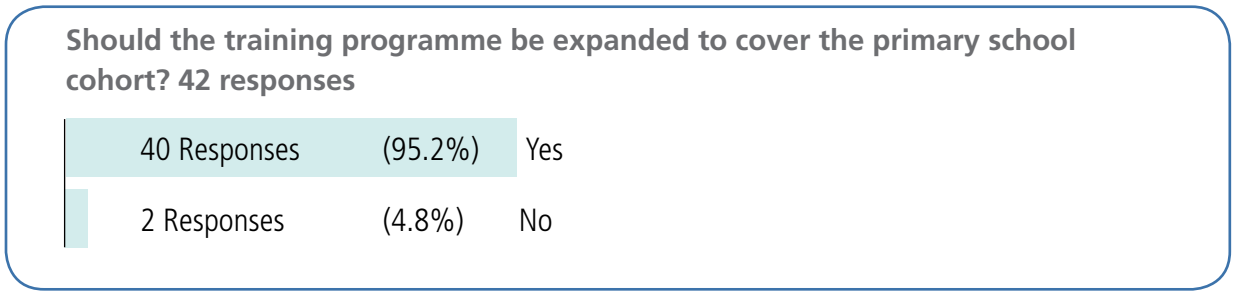


Figure 15: Primary school cohort

This question was also explored in qualitative interviews, including challenges associated with same:

'Only recently there, [NAME] gave us the OK to do the primary. Then, unfortunately, what happened was – COVID kicks in in March, we got the OK in June, on a Monday, to actually … They said, yeah, we have accepted your programme, you can run it. There were two sessions – July and August – two weeks in July and August it was run for – with primary schools. What happened was they wanted us to change it to put online and to do a QA in four days. Now it took me the guts of a month to put the programme together, re-jig it – they asked for an awful lot of stuff – so there was no way in a month. And the same happened with Cork – as [NAME] was telling me – the very same thing happened in Cork – they just said no.' FG 1, Professionals

'I would say maybe fifth/sixth class in primary school it could. Yeah to give them the knowledge of coming into secondary school because it is a massive change for kids coming into secondary school. They have no idea until they are in. They think they do but they don't. I suppose the volume of work and the subjects and that is huge and anything that can help them and prepare them for that. I would maybe – sixth class even – maybe not even fifth class but sixth class – it would be no harm – maybe an introduction, yeah.' Interview 4, Professionals

'I think if it could be started in primary school it would be brilliant – I think it would be.' Interview 2, Professionals

'As I said, probably sixth class is the best – they are kind of a bit more mature than 10- or 11-year-olds and, as I said, just given the basis for coming into secondary and just preparedness for them, yeah.' Interview 3, Professionals

Finally, having identified the strengths, challenges and opportunities for improvement in the TtT AT programme, survey respondents were asked whether they would recommend the course to others and whether they would be prepared to take part in additional training should it become available. A very positive response to both questions was collated. 95.2% of respondents would participate in more training if it was offered (see Figure 16 below). 90.5% of respondents would recommend this AT programme to others:

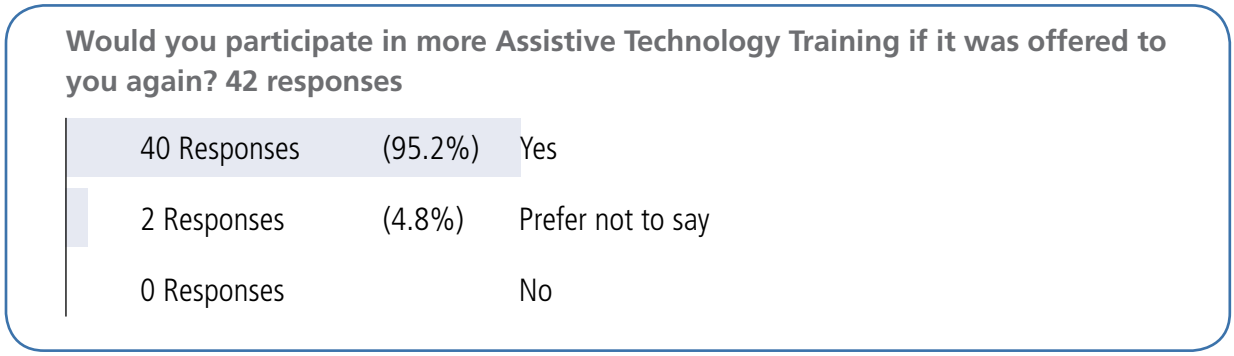


Figure 16: Participation in future AT TtT courses

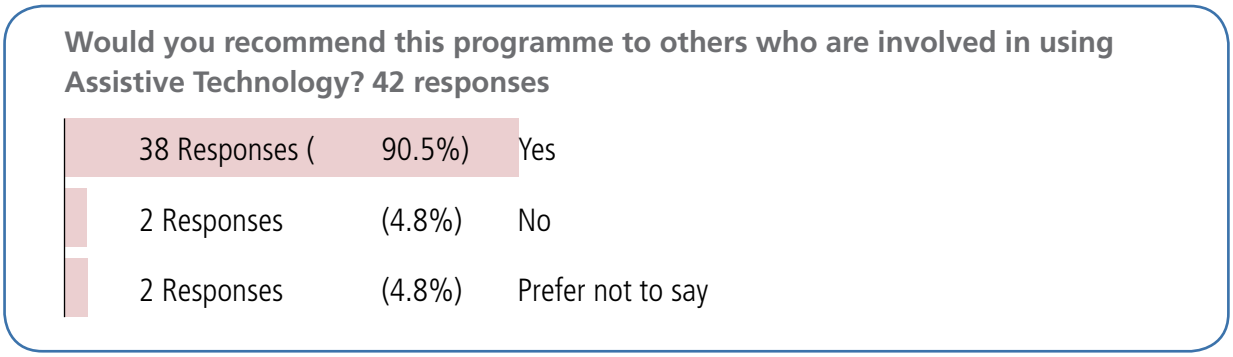


Figure 17: Recommendation of course to others

This positive finding was echoed in interviews:

'Initially we thought about upskilling students but now with the TtT approach it is much better because the teachers are more familiar with what is available and they can pass that on with the effect that the students might come to us – be they mature, be they school-leavers – knowing more about what is available and being familiar with it; so it has been fantastic and such a steep learning curve and I wouldn't change it for a thing – it is great.' FG 1, Professionals

'But it is fantastic you know. And I think that as well that – and I think the education centre itself even though … I would say it to our management committee, I genuinely believe that they don't see the real difference that it can make to the lives of learners,



you know, and I think by doing that I think that it enriches the education centre but it enriches the school community because you can offer these things and you know what you are offering is based on research and is based on experience and all of those.' Interview 1, Professional

'The other benefit was to make us aware individually and as a team about what the actual various potential avenues of exploitation that we could use towards Assistive Technology to support our learners – that was helpful. It was also helpful in terms of refocusing our want or need to identify that in actual fact we should always be thinking about the need for individual learners to require Assistive Technologies because whilst that might be – you know you say that is forefront all the time and you are thinking that – you have to keep reiterating it in order for it to stay there at the fore. It is easy to lose the focus, so it was very helpful in terms of us focusing our thoughts around the requirements and maybe the different types of learner needs. This would always be central to our way anyway but still no harm to refocus it.' Interview 3, Professional

The team behind the TtT AT training model have plans to expand and grow the programme, to include more promotion of freeware and to include more options for AT devices and products, as well as broadening their target audience:

'We also are moving into BTEI – Back to Education Initiative. That is mature students. So that is another area that we haven't really looked at because these mature students – well I say mature students – BTEI basically are anybody who has – who needs upskilling and are of a certain age. Now they could be 16 or 18 upwards or they could be up to 80 years of age. They will go into BTEI and they will do FETAC courses. A lot of them – the reason that they need this upskilling is because they never really, I suppose, succeeded in school is the only way to describe it because they probably had issues around dyslexia and that which wasn't diagnosed way back then.' FG 1, Professionals

4.5 Conclusion

Key findings from research focusing on the TtT model used by IT Carlow were outlined here. There were mixed responses in the dataset around prior knowledge and use of AT. Survey data indicated a reasonable level of proficiency prior to training amongst educators, however interview data indicated a low level of awareness. Post training, knowledge, awareness and proficiency improved across the dataset. The impact of AT training was described as largely positive for students and professionals. Challenges identified included time constraints, COVID-19 and the financial cost of AT devices. Chapter 5 will present the findings of research conducted on the first programme of a new AT training model – ATTAINS – used by Waterford IT.

CHAPTER 5

Findings

ATTAINS student-focused model of practice

5.0 Introduction

This chapter will present the results of this evaluation in relation to Waterford IT's ATTAINS model of student-focused AT training. This data reflects the initial three months delivery of the first programme of the ATTAINs model. Delivery and data collection was impacted significantly by school closures related to COVID 19. Results presented here include survey data and data collected from qualitative interviews with professionals and with one student. Results are organised thematically as follows: collaboration and partnerships; adequacy and usage; impact; challenges and opportunities. Therefore, these findings are positioned as a "snapshot" of the beginnings of the ATTAINS programme.

5.1 Collaboration and partnerships

Central to the approach that ATTAINS agreed upon was a student-focused or student-centred targeted programme. However, ATTAINS also run the programme with some special education needs coordinators, teaching staff and also with some parents. In the development of the programme, ATTAINS have established links with the Dyslexia Association of Ireland; the Waterford Schools Completion Team; WIT Access team; a partner school; a SENCO; and a special education needs teacher. Roles and responsibilities were identified through meetings, a target student group was identified – students with diverse abilities (including dyslexia, anxiety, depression or other diagnoses) – and also a time and date for delivery of the programme. In that sense, the ATTAINS programme began with a strong network of collaborators and supporters:

> *'Developing that partnership approach with Waterford Schools Completion Scheme really helped accelerate this programme and we feel that, without their support, we probably wouldn't have got into the schools quite so rapidly last year because, with their support, it meant that there was an additional person in attendance at all sessions which was important for child protection purposes.*
>
> *Look, we feel that it was a very smooth engagement working with the schools. They were just so supportive from the outset. They really felt that this was a programme that the student needed. In fact, they have come back to us and identified this as a gap currently existing within the schools – that Assistive Technology [unclear] needs to be delivered – but they don't have the capacity, the time or even the people within their teams to deliver this training on either a group or one-on-one basis with their students though this is something that they are very much in support of and they feel works very well. Feedback from other schools – they were coming to us and saying this is a role that they now have to identify within their school – they don't have a person to [unclear] for it.'*
>
> Interview 1, Professionals

5.2 Adequacy and usage

For reasons already stated, survey data was quite limited for this phase of data collection, with ten responses from students about their experiences with the ATTAINS programme. However, their responses do provide an indication of what a young person may gain from participation in such a programme. This information is also supported by qualitative data from professionals who reflected on their students' experiences, and one interview with a student. Despite the small number of respondents, ATTAINS professionals described the engagement and use of the training programme as significant:

> *'… the engagement was huge; the attendance was really good. That means there is something positive happening and that means that it is of benefit and you can't not like that! They were enthusiastic about it; so, the level at which it was being presented and it was being engaged with by students was definitely a recurring positive situation for everybody.'* FG 2, Professionals

The next avenue of enquiry to assess the adequacy of the ATTAINS programme was to examine, though limited by self-report measures, whether the training course met the needs of the students who attended. In Figure 18 below, 80% of survey respondents reported that the programme did meet their needs:

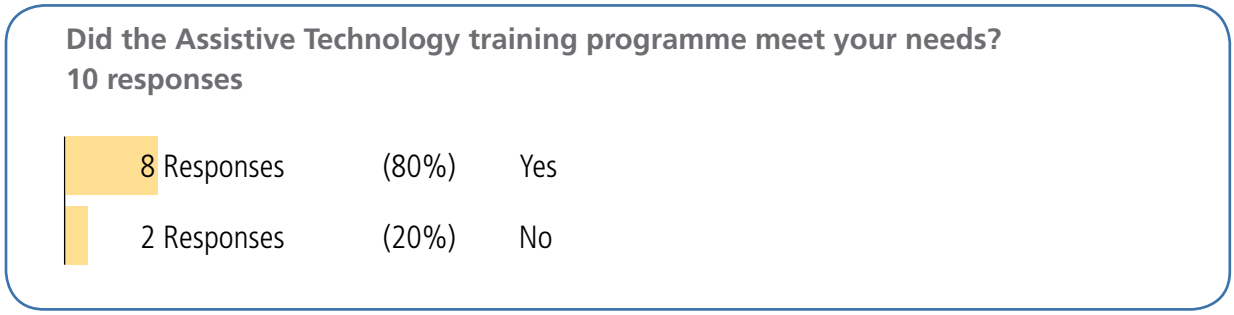


Figure 18: Meeting student needs - ATTAINS programme

The student that was interviewed concurred with this finding:

> *'I think it is really, really good because, once you do the course, then you actually know that is there but then you can actually start looking into it more and you can find a lot more things.'* Interview 1, Student

Professionals also offered their perspectives when interviewed:

'I would say yes. It has definitely helped them and prepared them for online learning. It has helped them with their schoolwork when they are in school. I think the areas that we are focused on like Office 365, freeware, Dictate, Immersive Reader – definitely very positive about those and particularly at the moment in this climate – have been a huge help to them.

I know [NAME] also did training on using Claro Pens. I think she did some training on the use of Ginger[24] *which I am not familiar with myself and possibly other applications; so, I would say it has been, I suppose, tailored to the needs of our students very, very well, yeah.'* FG 2, Professionals

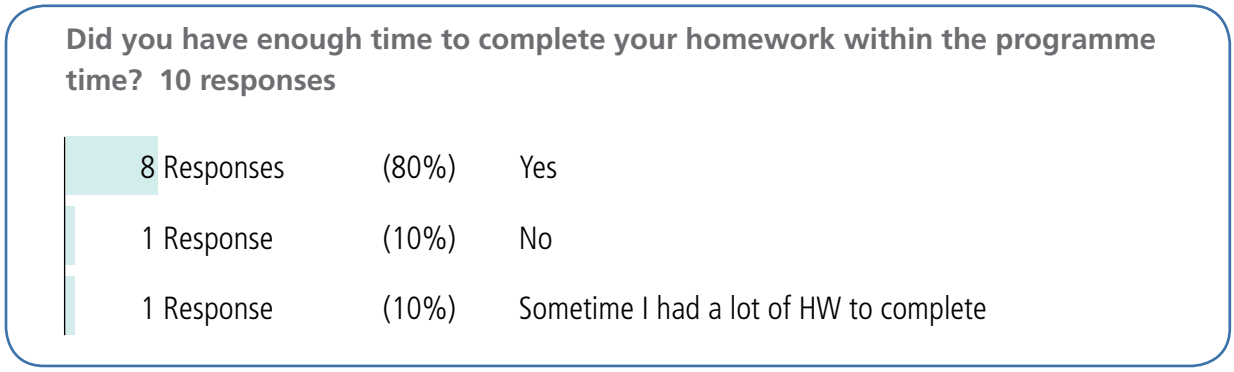


Figure 19: Was there enough time to complete homework?

Eight out of ten survey respondents reported that they had adequate time to complete their homework using the AT (see Figure 19 above). A minority of 20% found that they had some difficulty. The use of self-report measures – where survey respondents report their own experience in their own words – is subject to some limitations, such as recall, bias and communication style. It is not possible to account for hidden variables that might impact responses, for example that may have hindered completing homework for some students. While this is a limitation of the methods used, it does provide a snapshot of the experiences of students, in their own voices.

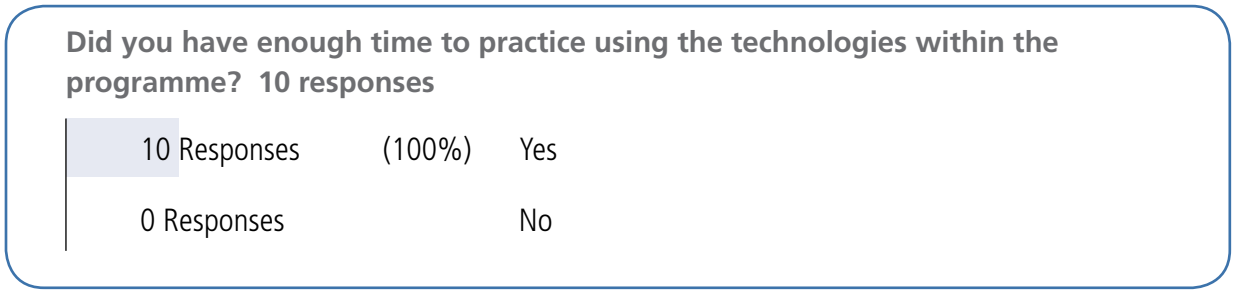


Figure 20: Was there enough time to practise using the AT devices?

All survey respondents reported that there was enough time to practise using the AT devices (see Figure 20).

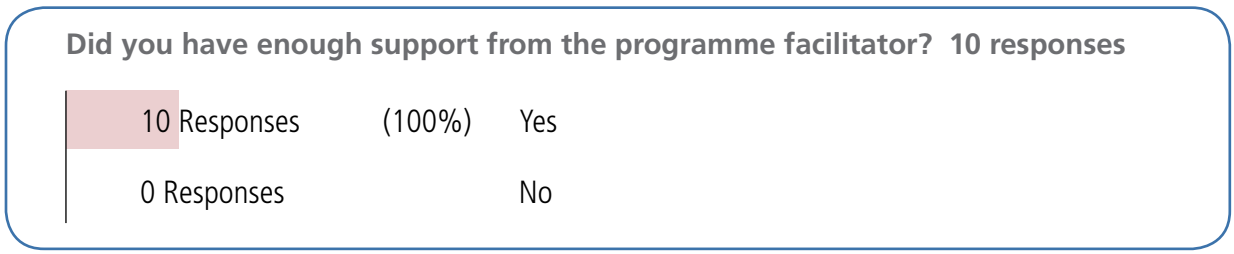


Figure 21: Facilitator support

24. Ginger is an assistive technology that can help individuals with Down Syndrome with their writing.

All survey respondents also reported that they received enough support from the programme facilitator, which may strengthen engagement with the devices and the training course in general. This is in line with literature (Mackenzie, Cologon and Fenech, 2016; Edyburn, 2006; Kozulin, 1998) that underscores the need for a human connection to support the relationship between the trainee and the device. Another element to the ATTAINS programme is a peer-to-peer mentoring model, which has proven to be very popular with students:

> *'Peer to peer is very successful and works well and the model that we use with the Homework Club allowing TY mentors to come in and help at Homework Club as part of their Gaisce is really successful and has been for years and years. We have done that, we have been there, we worked that and that is something that we would see as a positive progression on this programme.'* FG 2, Professionals

5.2.1 Awareness of AT prior to training programme

Levels of awareness of AT were mixed amongst survey respondents prior to engagement with the training programme. 50% of respondents reported average knowledge, 30% reported good knowledge, 10% reported poor knowledge, with the remaining 10% reporting very poor knowledge (see Figure 22 below):

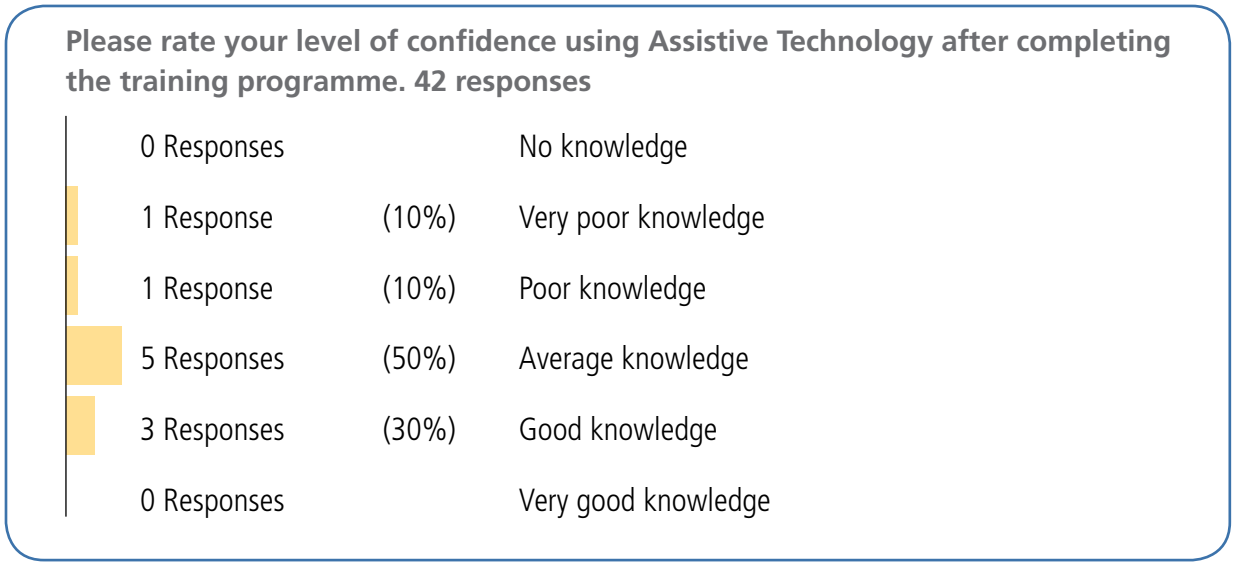


Figure 22: Knowledge of AT prior to training

Similarly, when asked had they ever used AT before starting the training programme, 80% responded 'a little' whereas the remaining 20% responded 'no'. So, while there may have been a certain level of awareness of AT prior to training, actual use of the AT devices and products was very limited (see Figure 23):

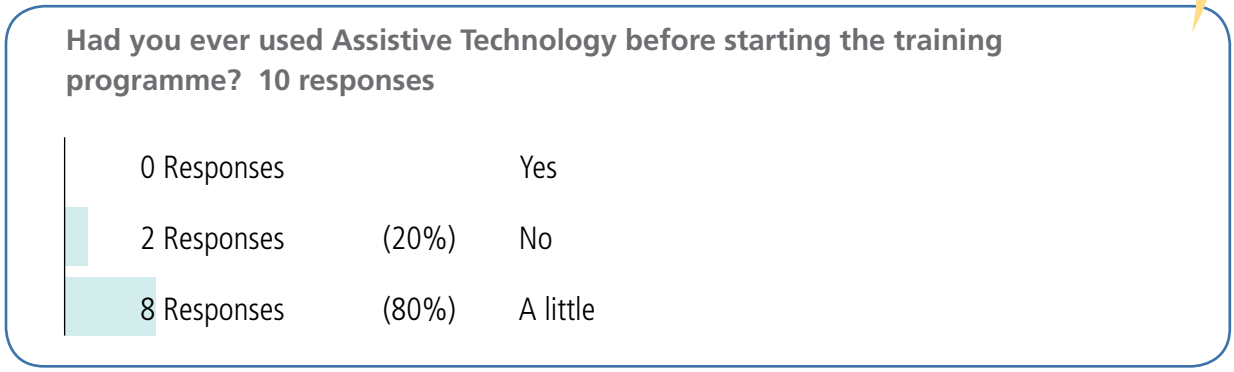


Figure 23: Use of AT prior to training

Qualitative data from the student interview supports these findings:

> *'I have always not been bad with technology. I always kind of like know what I am doing but I never really looked into the Word or Office 365 to see actually how much I do have with assistive technology so I didn't really use it that much or really at all before I did the course.'* Interview 1, Student

It is noteworthy that some of the professionals interviewed expressed a desire to increase their own knowledge of AT devices so that they could better meet the needs of their students:

> *'I would really benefit from expertise to help me, and to help them, to I suppose work best and to work smartly and to work efficiently. I am sure there are technologies that I don't know about.'*

> *'… is there something else out there that I don't know about that she could use? So yeah, I suppose I would benefit from expertise in dealing with those specific students as well if that is available.'*

> FG 2, Professionals

5.2.2 Learning and benefits accrued

A number of survey questions were designed to assess whether students had learned and benefited from the AT training programme and in what areas. When asked in the survey what they liked most about the training programme, qualitative responses from students included:

> *'Getting to try out different types of technology'*

> *'Linking in with other students who have dyslexia'*

> *'Seeing all the different types of assistive technology'*

> Survey Respondents

These responses are connected to having time for practical application, peer support that is provided by specialist services like ATTAINS and a sense of empowerment through awareness and knowledge of what AT could help with. In Figure 24, all respondents report that the course was helpful overall to them:

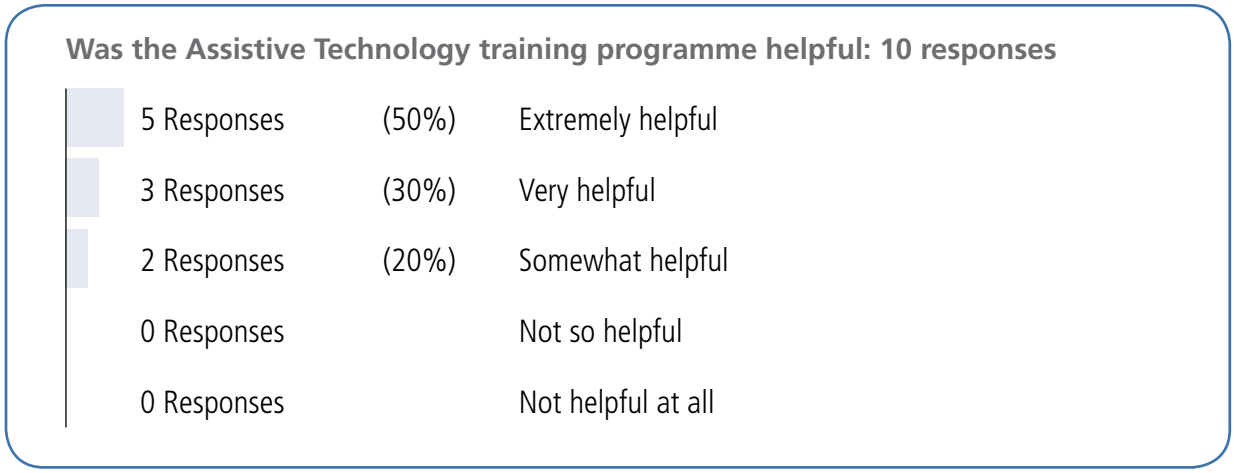


Figure 24: Helpfulness of the ATTAINS programme

Survey respondents were later asked whether the AT training programme helped them with the time it took them to complete their homework. A majority of 80% responded that it had helped with reducing time spent on homework (Figure 25):

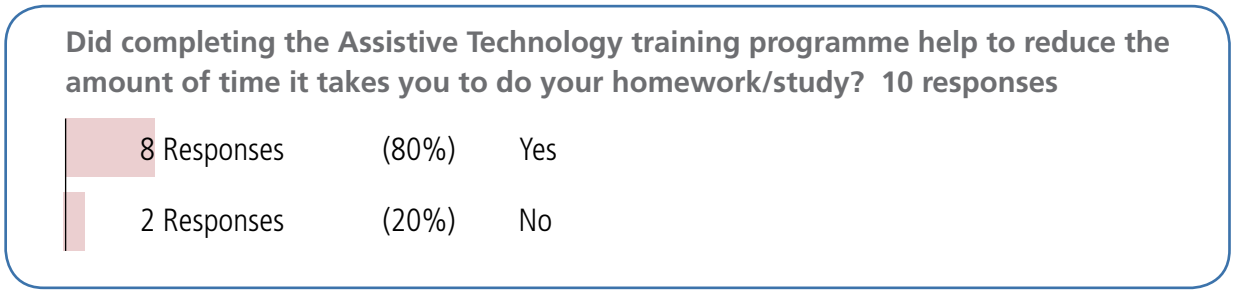


Figure 25: AT training's effect on time spent completing homework

Asking students about their comfort level and confidence with AT was important because these factors support independence. Independence, in turn, supports transitions from post-primary school to higher education (Fleer, 2010; Kravtsova and Kravtsova, 2010; Hall, 2016). Data from the ATTAINS professionals' focus groups supported this finding:

> *'it made everything flow more easily and it had those powers that they were able to look up stuff that they needed. They needed less assistance from us – some assistance but less.'* FG 2, Professionals

One qualitative survey response also echoed the benefits of enhanced independence:

> *'Once I knew about one thing I was able to explore other things myself.'*
> Survey Respondent

Encouragingly, 100% of student respondents reported feeling comfortable using AT to complete their homework having engaged with the AT training programme (see Figure 26):

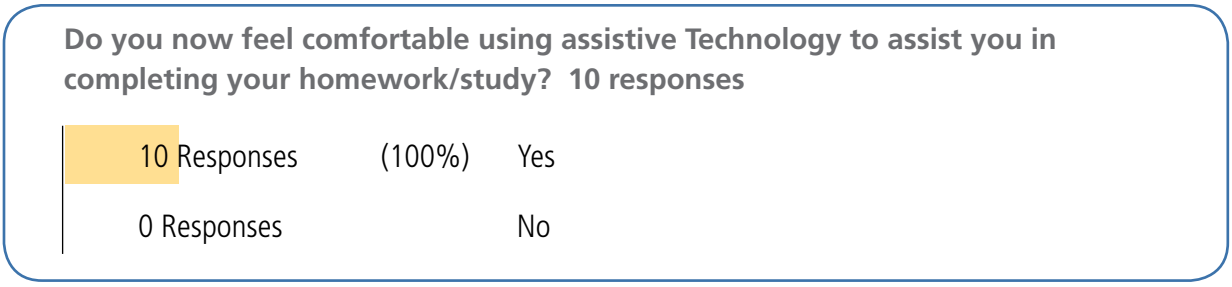


Figure 26: Comfort completing homework

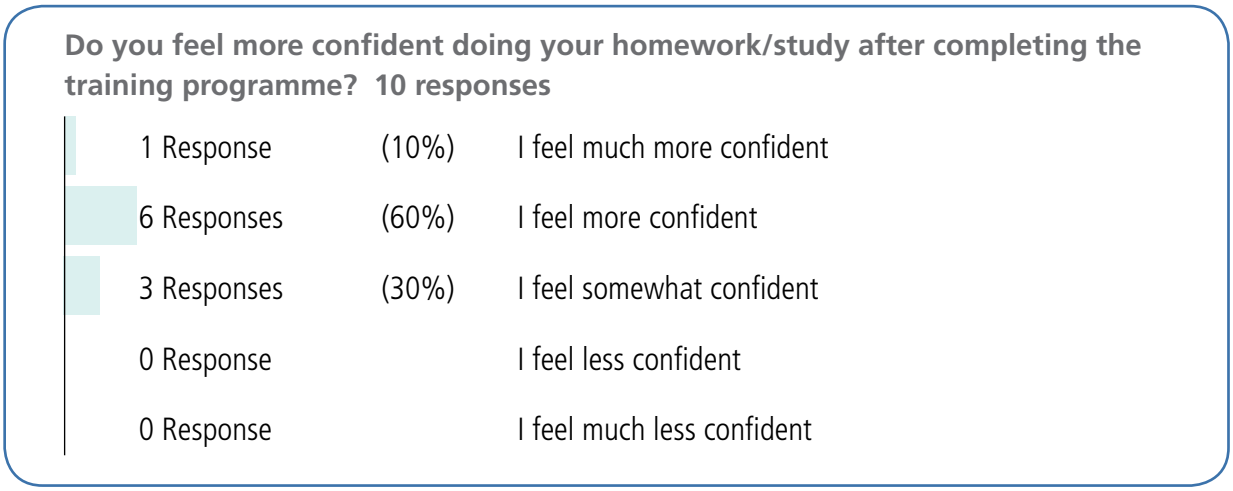


Figure 27: Confidence completing homework after AT training

Results from the survey question about levels of confidence using AT to complete homework were also very positive. 60% of respondents felt more confident; 10% felt much more confident and 30% felt somewhat confident after AT training. Qualitative data from the interview conducted with the student supported these findings:

> *'Well it definitely helped with study and other things like school with PowerPoints and stuff like that because, if I didn't do the course, I don't think I would know about that and it wouldn't really help at all. The Immersive Reader was actually quite good. We did a good bit on that. Reading – when the Immersive Reader's reading it out to me – I think all the information gets into my head better than reading it or writing it down. The dictator also helped a lot – the dictating feature. It saves a lot of time typing and it is good for the spelling as well because you can say a word and it will just spell it and if you have no clue how to spell it – like I use with my phone on the keyboard it has the mike – and if I don't know how to spell that word at all I will put it in and then I will have the correct spelling. So, I found out about the Immersive Reader and then I was seeing if it was on Notebook and, when I was checking if it was on Notebook, I found out I can change the page colour on Notebook. I would say I would be a lot more comfortable using it now for loads of different things.*

I think I would be able to help other people with the knowledge that I got from that because I know when I was there other girls were going home and they were showing their mum and dad and their brothers and sisters and it was then helping them.' Interview 1, Student

Lastly, survey respondents were asked to rate their experience of AT training from 1 to 5. A majority rated the training course very positively (see Figure 28):

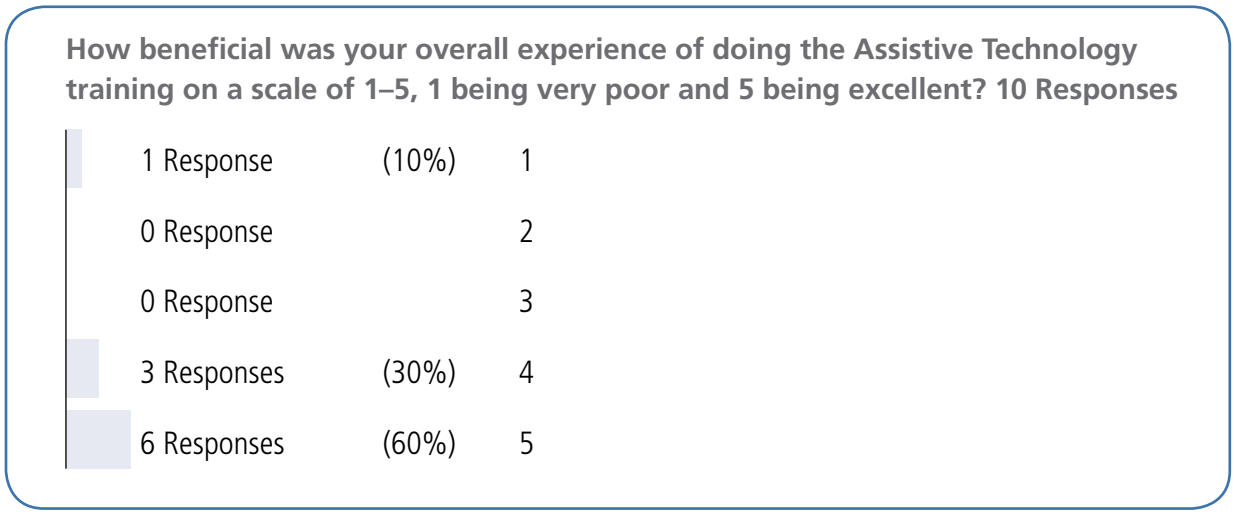


Figure 28: Overall experience of ATTAINS

5.3 Impact

There were several examples that ATTAINS professionals were able to disclose with regard to direct impact of the training on students:

'One girl in particular – 13, she has SpLD, ADHD – more so kind of "what is the point of this, I am never going to go to third level. I am not going on to third level". She was probably one of the people that surprised me the most. She actually said that she uses the AT now in class. I asked how are you doing that, can you tell me how you did it? "Oh yeah look I was supposed to present on some work" … She didn't want to stand up in front of her peers so what she did was she activated the Immersive Reader. So, she asked her teacher – the computer talked for her instead of her actually standing up and presenting; so she introduced Assistive Technology into the classroom herself on her own initiative. I suppose she used innovative ways to use the technology to help her because otherwise the alternative there was that she wouldn't have actually completed that piece of work.' FG 2, Professionals

'Others then – like a student with SpLD, she had ADHD … Again, it was crazy the examples that were coming out. She used to say that oh again "reading is very difficult for me, I tend to lose focus, I tend to lose concentration". Clearly profound severe dyslexia again – the words are jumping out at her and what she said then was

the colour overlay and the line focus really helped her. She did mention that what she used to do previously was to put her hands up to the screen to try and block out distractions.' FG 2, Professionals

The value of interaction, socialisation and shared experience for the students who attended the AT course is illustrated by the quote below, which also highlights the importance of peer support:

'There were two third-year students who weren't friendly with each other before the course started. They both have dyslexia – they knew each other – but they seem to be getting on great in the class and I think it is very important for them to see that they are not the only ones and they are being supported by WIT – which is a very important institution in Waterford, they all know of it and are aware of it and it is only up the road from us – but to have somebody coming directly from WIT and taking a group of junior students – I think it was quite a big thing for them and then the bonding then with other students – and students in first year seeing that there are third-year students as well who have dyslexia, who are using their laptops – and that this is normal. You can't really document that, you know, but it is very powerful I think as well and they were very proud getting their certificates.' FG 2, Professionals

While this is encouraging, peer support and socialisation could be further scaffolded by a UDL approach within schools. Previous research on students with diverse abilities found that broader socialisation within the wider school environment could be enhanced by utilising UDL principles in a systematic manner (Cage et al., 2019; Cage et al., 2018).

5.4 Challenges and opportunities

Survey respondents were asked to identify any areas of the training course which they did not find helpful, and the qualitative responses given relative to this question are presented below:

'It was after school hours.'

'I would like to work at my own pace which was a bit faster than others.'

Survey Respondents

The ATTAINS programme team identified many challenges to their training course delivery, including COVID-19 restrictions; students without a diagnosis; requiring further support to scaffold students' transition to higher education; and additional training requirements for staff. However, many opportunities were also identified. These are outlined below using illustrative quotes from the interview dataset.

5.4.1 Challenges

COVID-19 and the online setting

Challenges which relate to COVID-19 mainly referred to school closures and the transition to the online setting. It also refers to disruption of plans for the training programme, which had to be adapted:

> *'I would love to see it done in normal times because I do think we had to adapt it and it was much more challenging in COVID times; so I would love to have a run at it in normal times to see could we get the senior cycle and to really get feedback and evaluate what it is like when we aren't so restricted in what we could or couldn't do.'* FG 2, Professionals

> *'So I suppose we are treading carefully but I do believe after five weeks now we need to push forward more with that turning on the camera where we all can benefit from seeing some sort of interaction, some sort of face on the screen rather than a circle with initials. So, if you can come up with an answer for that for us – and every school in the country seemingly – please share – that is all I can say. That is, I suppose, one of the things that online is causing some – there are some problems with that – there definitely is. To maintain that emphasis.'* FG 2, Professionals

> *'The programme initially then was partly piloted last year until closure in March so we had four six weeks completed but, from that pilot, we learnt a great deal and really what we learnt was the content that was going to be delivered in the programmes. So, initially, we had planned to train students up on the most commonly recommended Assistive Technology software and hardware that is recommended to students with specific learning diverse abilities of higher education; namely WIT but what we found with the school closures last March was that, when the students found themselves working from home, these pieces of technology or software weren't accessible to them.'* FG 2, Professionals

Students without a diagnosis

Professionals expressed their frustration at being restricted in reaching students with diverse abilities who had not yet received, or may not ever receive, a formal diagnosis. This further highlights the need for embedding a UDL approach into schools, where access to AT is there for all students:

> *'As I said we have 25% of students who would be reading below their chronological age and some of them are very well below it. We are talking about I would say at least 10% who are reading at the age of nine – sometimes eight. We have students coming in reading at the age of seven and a half and then we have a lot of students reading at the age of ten. So ten, nine, eight – a few at seven – they don't have diagnosis but they would certainly benefit from an extension of that programme to them if that were possible I would say.'* FG 2, Professionals

'I suppose we don't know many ways that the people that we sometimes are more challenged by and may benefit would be students with behavioural difficulties – that frustration with learning – and they might be very clever – but they just have either ADHD or other needs and challenges that don't allow them to be able to engage and participate in normal mainstream classes. The additional help with Assistive Technology might be something to refocus them, redirect them, on learning and that is another, I suppose, cohort of students I would like to see benefit and I would believe would benefit from the Assistive Technology programme. It is sometimes much harder to help them because they aren't as easy to work with but definitely I do believe that this priority on helping them to access technology and get support from Assistive Technology would be something that would enable them to engage more positively in school and in their own learning. So that is another cohort that we could, I suppose, link into this programme.' FG 2, Professionals

'Other students – who don't have dyslexia – that the programme could be extended to them. They may not have a diagnosis of dyslexia but we would have about 20% to 25% of students who would have literacy difficulties and that the programme would really benefit those students as well to help them with their understanding of what they need to do and generating their homework or doing a bit of research. So that could possibly be the next step.' FG 2, Professionals

Transition to higher education and additional supports

Professionals also expressed the need for additional supports where educators could seek out information if needed around students' transition to higher education:

'Who are the experts here? Where do we go? As an educational society, where is, who are the people that know?

So I would agree with [NAME] that the need for some establishment of higher education to, I suppose, identify themselves as having expertise in a specific area or to be that go-to place to help us access the specific needs or the specific information would be hugely beneficial.'

FG 2, Professionals

A 'whole school' approach to AT was found to be desirable amongst educators. This would include embedding AT into the school's curricula and approach to teaching and learning in line with UDL principles. A complete UDL environment that meets the needs of all students and extends to the Department of Education (see illustrative quote below) was said to be warranted in addition to the provision of AT specialised programmes. Some studies have found that specialist services could potentially hinder students' sense of belonging in the wider school space (Cage et al., 2019; Cage et al., 2018):

'… I would see a need for staff of the school to also be brought along on this Assistive Technology journey to allow that to be further enhanced and strengthen



the actual programme in a school so that you not only have the students benefiting – and I suppose the link with the parents – maybe that is another area that needs to be supported – so that we are all moving forward together rather than one stakeholder or person in the whole educational family being left behind.' FG 2, Professionals

Concerns were also expressed that students who were accustomed to using laptops to complete their schoolwork are placed at a disadvantage when they subsequently have to sit written examinations for the Junior and Leaving Certificate state examinations:

'My only reservation and worry is that the Department of Education haven't really caught up as usual and so my concern is that a student with dyslexia will not be able to use their laptop for their junior cycle exams or a Leaving Cert student won't be able to use their laptop if they don't have … so you are training them to use their laptops in first, second and third year and they are generating their homework and then, for their Junior Cert, you give them the writing exam and they don't reach the criteria – because the criteria is very strict and very stringent – and they have to sit their Junior Cert exam on pen and paper; so that is really a problem … It is crazy, I think.' Interview 1, Professional

In the survey data, students also had a mixed response to whether they felt the ATTAINS programme had prepared them sufficiently for the journey ahead in transitioning to higher education. Half of those surveyed felt prepared while the other half felt unprepared. However, these results must be put into context. Students may not have connected the AT training with transitioning to higher education and how it might help them in the future. When asked for further detail on this section of the survey, qualitative responses in relation to transitioning to higher education are presented below:

'I'm not going to college.'

'I will not be going to college anytime soon.'

'I am only in first year and have not thought about college yet.'

Survey Respondents

5.4.2 Opportunities and next steps

Student input

As already stated, the data from students was very limited. However, in representation of recommendations for improvement to the training programme made by students in the survey responses, the following qualitative responses are presented below:

'Adding more to the course'

'Not as long'

'By adding more programmes apart from Word'

Survey Respondents

Peer-to-peer mentoring

Expansion of the peer-to-peer mentoring model was discussed in the dataset from the ATTAINS team of professionals. The value of peer-to-peer mentoring has been highlighted in previous work conducted by the SOAR Project which studied the needs of students from specific target groups (Brennan et al., 2021):

> *'What I was going to add there as well for the advantages I would say that this particular group of junior students have – they have had two sessions now of Assistive Technology training – and I would really like to see them when they go on to senior cycle being mentors and assisting in the class. I think it has probably boosted their confidence and their self-esteem because they need to use technology because of their disability and the work that they produce is going to be better … So I think for their confidence and I can see them hopefully going forward and becoming mentors themselves.'* FG 2, Professionals

Training extension to primary school cohort

Professionals were also asked whether they would support an expansion of the student-focused model to the primary school cohort. Perhaps unsurprisingly, they were in full support of this as they already have extended their training to this group of students:

> *'Extended to primary school? Whenever they need it, you know – according to need – and that is the main thing. We can see … I mean at school completion, we identify children from four years of age who are in danger of early school leaving so, if you are going to identify children at four – if principals can identify children at four – we can identify children who have additional learning needs as well and to get those supports in early; so it is preventative, you know, and they are not falling behind their peers. It is much easier and more beneficial to do the preventative stuff than the reactive stuff.'* FG 2, Professionals

Next steps

To conclude, ATTAINS, although restricted by school closures and many other challenges, remain passionate and optimistic about their student-focused model of practice:

> *'Really our plan for the programme then is to scale it up as much as possible. Many post-primary schools in not only Waterford but the surrounding catchment area as well – we feel we can certainly do this because we have identified an approach that schools very much welcome. The schools have identified this as a gap – something that they need – and look because it is programme-based – it is not a one-off session – we feel it worked very, very well.'* FG 2, Professionals

5.5 Conclusion

In summary, the evaluation, due COVID 19 school closures and the focus on one initial programme which had been launched at the time of data collection, yielded a smaller dataset than the TtT model of practice. A number of initial conclusions can be drawn. The ATTAINS programme began with a strong network of collaborators and supporters. Despite challenges faced, 80% of survey respondents reported that the programme did meet their needs and all respondents reported that the AT training course was helpful to them. Expansion of the peer-to-peer mentoring model was discussed in the dataset from the ATTAINS team of professionals. Expansion of the programme to include primary school cohorts was fully supported by ATTAINS, perhaps unsurprisingly as they already have extended their training to this group of students. Professionals also expressed the need for additional support from perhaps a centralised AT hub, where educators could access information for young people transitioning to higher education. Interestingly, some of the professionals who were interviewed expressed a desire to increase their own knowledge of AT devices so that they could better meet the needs of their students. The data indicates a possible lack of coordination of services in that the information (e.g. around use of AT in higher education) is not being accessed evenly and widely across the post-primary education system. This is in line with findings of the latest NCSE report (2020). It is possible that communication and coordination channels require strengthening between post-primary schools and Disability Support Services (DSS) in higher education. If that is the case, a centralised AT hub would be of benefit where all educators at all levels could obtain the information they require. AHEAD have developed an online hub,[25] which may need to be promoted further amongst schools. An opportunity for collaboration between both AT training models with a TtT component and a student-focused element may also exist. This possibility has been supported by literature (Wynne et al., 2020) which stated that both training of educators and students must occur to achieve best outcomes.

25. Discover your Assistive Technology – AHEAD.

CHAPTER 6

Discussion and Recommendations

6.0 Discussion

In addition to supporting the education of all students, Assistive Technology (AT) works to remove some obstacles for students with diverse abilities on their learning continuum from primary to post-primary to higher education. The benefits of using AT for students as they attend educational settings from primary school to higher education are many: increased confidence, increased engagement, and enhanced executive functioning (Satterfield, 2020). AT is part of a legal obligation on higher education institutes (HEIs) to provide an accessible learning environment for every student (Holmes and Silvestri, 2012; Stodden et al., 2001, Guyer and Uzeta, 2009). The numbers of students with diverse abilities accessing higher education is increasing (Francis et al., 2018; Hansen and Dawson, 2019). AT offers an integral role in supporting this trend to continue. AT supports students with diverse abilities can scaffold the transition to higher education. The provision of AT is also part of the provision of optimum supports for such students in completing their chosen programmes of study (Francis et al., 2018). This evaluation focuses on post-primary schools and provision of AT at this particular point of need – prior to their transition to higher education.

A narrative review was conducted as part of this work, which highlighted the paucity of literature on AT training (and AT in general) in the Irish context. Currently, there is no standardised model of AT training internationally (Nordstrom et al., 2019). From the studies that have been conducted, proficiency with AT devices and a positive mindset towards AT amongst educators are seen as important factors in the success of AT for students (Abbot et al., 2014). This can be difficult to achieve as the range of AT devices is so vast (WHO, 2019) and may be overwhelming for educators in choosing the right device or product to meet their individual students' needs. Sustained and systematic support in navigating the plethora of AT resources is needed for both educators and students. That is why AT training is so important – achieving educator proficiency and confidence correlates with student achievement. This evaluation focused on two existing methods: the TtT model of practice, where educators are trained to use AT and take this learning back to the classroom, and the student centred/focused model of practice, where students attend AT training sessions as part of their school day or after their school day.

Key findings from research focusing on the TtT model will be summarised here. There were mixed responses in the dataset around knowledge and use of AT prior to training. Survey data indicated a reasonable level of proficiency prior to training amongst educators, however interview data indicated a low level of awareness. Post-training, knowledge, awareness and proficiency improved across the dataset, which speaks to the efficacy of the TtT model of practice. The impact of AT training was described as largely positive for students and professionals. The majority of respondents felt their knowledge of AT had improved: 40.5% reporting some knowledge accrued; 35.7% reporting a good level of knowledge accrued and 19% reporting a very good level of knowledge accrued. In total, 95.2% of respondents reported that learning had occurred during the AT training course.

Recent research (Munyoroa, Machimbidzab and Mutulac, 2021) has underscored a lack of trained AT educators as a key challenge to successful implementation of AT in educational spaces (77.2% of teachers agreed or strongly agreed that a lack of training exists). Where a lack of training exists, educators tend to use more low-tech devices in classrooms rather than attempting to use higher-tech products, which may mean that their students' needs are not being met. Post TtT AT training, a majority of survey respondents (73.8%) reported that they felt they had successfully gained new skills through taking part in the AT training course. 64.3% of educators reported that the way in which they approached AT training with their students had changed post-training. Increased confidence was evident in a large majority of survey respondents (95.2%) when using AT in the classroom. This is an encouraging finding, as previous research has shown educators' experience of using AT in the classroom was found to be positively influenced by confidence and comfort (Liu et al., 2017). In terms of impact on the students, some very positive comments were made around benefits witnessed in students' behaviours and engagement in the classroom. These findings point to the TtT model as being effective for both educators and students.

Challenges identified for the TtT programme team included time constraints, COVID-19 restrictions and the financial cost of AT devices. When asked about the biggest challenge in running the AT training programme, the team responded that the initialisation of the project and establishing essential connections was most difficult. If a centralised AT hub could be created, involving HEIs, this would provide a point of information and support for educators, including around preparing their students for higher education. Another challenge identified was that the majority of survey respondents felt that they did not have sufficient time during the course delivery to practise using the AT devices. The sense that the training programme was impacted by time constraints to some extent was expressed also by one interviewee. The matter of time constraints was found in the AT literature also, which spoke to inaccessibility of training due to training being held outside of their institute or during working hours (Abu-Alghayth, 2020). Efforts should be made to ensure that ongoing AT training is seen as continuing professional development (CPD) by schools and education centres. Adequate time and resources should be dedicated to ensuring that trainees have sufficient time for practical application, in order to build the necessary proficiency and to ensure that use of AT is as effective and transformative as possible for the students. In terms of development of accessibility, 90.5% of respondents agreed that educators of the primary school cohort should be given access to a TtT AT programme.

Another important factor to discuss is the cost of AT. Social justice includes supporting people with diverse abilities in educational spaces, however the reality is people may be excluded from accessing AT for financial reasons (Lyner-Cleophas, 2019; Visagie et al., 2016; Atkinson and Castro, 2008). The cost of AT devices and technologies was discussed in the qualitative interviews. An emphasis on accessing freeware was found across the dataset. This is in line with the literature which found that increased access to free open-source software (freeware) such as NVDA may be a solution (Lyner-Cleophas, 2019). However, additional funding should be made available to ensure that all students' needs are met with the correct device or product to support them on their educational trajectory.

The accessibility of AT is a human right, similar to healthcare and education, and our national division of funding for AT should reflect this (MacLachlan et al., 2018).

Finally, survey respondents were asked whether they would recommend the TtT course to others and whether they would be prepared to take part in additional training should it become available. 95.2% of respondents would participate in more training if it was offered and 90.5% of respondents would recommend this AT programme to others. The programme team have embedded plans to continue and expand upon their model of practice, including mature students. IT Carlow's TtT model of practice, having studied the evidence, can be considered a success to date with some opportunities for improvement identified (see practice recommendations below).

The findings from the evaluation of the ATTAINS student-focused model of practice will now be discussed here. This evaluation reflects a period in time (October to December 2020 inclusive) when the ATTAINS programme was in its infancy and facing many challenges including school closures and the data collected must be considered within this context.

The dataset for the ATTAINS programme consisted largely of data collected from professionals who delivered the training, and data from students who attended the training was limited to ten survey responses and one interview. Nevertheless, professionals were able to speak to the impact of the AT training through their engagement with students.

A number of conclusions can be drawn from the evaluation of this programme. The ATTAINS programme began with a strong network of collaborators and supporters. This indicates support and recognition for a need for student-focused training of AT, which is in line with the literature on the importance of fostering self-determination in children to support active citizenship in adulthood (Law, 1998). A recent study found that AT use in children had a positive impact in the areas relative to self-determination: competence, adaptability, self-esteem, self-efficacy, wellbeing and educational engagement (McNicholl, Desmond and Gallagher, 2020). Furthermore, previous research has found that children who were taught to use AT devices began to demonstrate improvements in the areas of making choices and becoming more independent (Lenker et al., 2013; Bowser and Reed, 2012; Kling et al., 2010). This is linked to transitioning to higher education and the ability to socialise with others and live independently. 80% of students surveyed reported that the programme did meet their needs and all students surveyed reported that the AT training course was helpful to them, indicating that the programme was well designed and delivered with the needs of the student at the centre of decision-making. ATTAINS use a peer-to-peer mentoring model which they would like to expand. Peer-to-peer support has demonstrated benefits internationally in many diverse contexts and may be an untapped resource in AT. Professionals also expressed the need for additional support, perhaps from the higher education sector, in providing a centralised hub where educators could seek out information if needed around transitioning to college. This was also expressed by professionals delivering the TtT model of practice. Of interest is that

some of the professionals that were interviewed expressed a desire to increase their own knowledge of AT devices so that they could better meet the needs of their students. This indicates a possibility for collaboration between both models with a TtT component and a student-focused element. Again, the expense of AT devices and products was discussed in the dataset, with Waterford IT only using freeware. Promotion and use of freeware is central to making AT accessible to all.

Lastly, AT is not just for students with disabilities. It is for all students. UDL principles create an inclusive environment where students with diverse capabilities can learn from each other (McGuire and Scott, 2006). All students benefit from a UDL environment (North Carolina State University, n.d.). This is particularly useful for the cohort of students under consideration in this report as lack of diagnosis was discussed as a challenge in meeting those students' needs. With further emphasis on the use of freeware, additional training opportunities for educators and a coordinated approach to information dissemination across the education system, AT can be supported in becoming a prerequisite in every classroom, in every school.

6.1 Looking ahead – strategic plan

Key Recommendations – Practice

- Students who use AT should be given a meaningful role across the training delivery arc. Expansion of the peer-to-peer mentoring model was discussed in the dataset from the ATTAINS team of professionals. The value of peer-to-peer mentoring has been highlighted in previous work which studied the needs of students from specific target groups.
- Expansion of both models to the primary school cohort should be facilitated, as early intervention has been proven to result in better outcomes for persons with diverse abilities.
- There was evidence to suggest that educators had limited awareness of where to access support in preparing their students for using AT as part of transitioning to the higher education setting. It may be outside the remit of HEIs to provide such support, however an independent centralised AT hub, where primary and post-primary educators can go to seek information or other supports around AT, could provide coordinated AT connections between post-primary and higher education sectors.
- Disability Support Services in HEIs are aware of the benefits of AT for students with diverse abilities and encourage the appropriate use of AT that match the individual needs of students. This includes ensuring accessibility of a range of AT devices. In this regard, freeware[26] should be used wherever possible.

26. Freeware is Assistive Technology which is no cost and openly available.

- As no standardised model of AT training currently exists, consideration of a programme for educators and students, which combines both models evaluated in this report, would be of benefit. Evidence from this research suggests that educators delivering AT training to students wish to build upon their own knowledge also in order to provide the best service possible to students.
- Sufficient time and resources should be allocated for training of students in AT within the curricula of post-primary schools, given student proficiency in AT enables wider educational benefits, learning pathways and allows for students to study all topics.

Key Recommendations – Policy

- More emphasis on AT in our national disability policies would support stakeholders and people who need AT devices in education to have their constitutional and human rights further enshrined in policy documents.
- Stakeholder engagement and participation in policy development and needs analysis are essential. The voices of students who use AT should be present at policy level.
- A specific national AT policy would be welcomed to further strengthen the recognition of need in this area, to ensure investment, and to develop a standardised method for AT training delivery and outcome measurement.
- Funding should be increased so as to ensure provision of appropriate AT devices and products that meet the individual and subjective needs of students from primary school level to higher education level, and to ensure that financial cost does not hinder educational pathways for people with diverse abilities. Additional promotion of freeware is vital.
- A research body that examines the connective relationship between success in educational settings and use of AT would help to develop a better understanding of the benefits and limitations of these products and devices.

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Appendix 1

Information Sheet for TtT Evaluation Participants

Information Sheet
Assistive Technology Training Programme
Interview

Purpose of the Study.
The SOAR Project is an inter-institutional collaboration on Access. It brings together the South Cluster – Cork Institute of Technology, Institute of Technology Carlow, Institute of Technology Tralee, University College Cork and Waterford Institute of Technology together with community partners to collaborate on devising and delivering strategies to increase access to higher education for under-represented groups. The purpose of this study is to evaluate the Assistive Technology training programme. The Assistive Technology training programme was designed using the TtT approach to train teachers, principals, special needs assistants and parents in Assistive Technology. Those who participate in this training can then impart the knowledge and skills learned from the course to others who would benefit from this.

What will the study involve?
The study will involve your participation in group interview with a researcher and other participants to discuss your opinions, experiences, ideas and the challenges that under-represented groups may encounter in transitioning, engaging, performing and progressing in higher education.

Why have you been asked to take part?
You have been asked to take part in this study because you/your school/students/child participated in assistive technology training

Do you have to take part?
No. Participation is voluntary. You will be asked to sign a consent form. You also have the option of withdrawing before the study commences (even if you have agreed to participate) or discontinuing two weeks after the discussion.

Will your participation in the study be kept confidential?
Yes. We will ensure that your identity will not appear in the final report or subsequent publications. Any extracts from the interview that are quoted, in any subsequent report and publications, will be entirely anonymous. We ask participants to respect the confidentiality of other participants and do not share information disclosed in the group. However, we cannot guarantee this.

What will happen to the information that you give?
The data gathered will be kept confidential for the duration of the study. It will be securely stored on password-protected computers and only be available to the research team on the UCC Access and Participation Services project. On completion of the project, data will be retained for a minimum of a further ten years and then destroyed, according to policy at UCC.

What will happen to the results?
It is expected that results of this study will be published in a project report, academic articles as well as on the project website.

What are the possible disadvantages of taking part?
We do not envisage any negative consequences for you in taking part.

Who has reviewed this study?
Approval has been given by the Social Research Ethics Committee of UCC.

Any further queries?
If you have any queries or concerns about this research, you can contact Dr Fiachra Ó Súilleabháin the principal investigator (PI) at fiachra.osuilleabhain@ucc.ie or you can contact the head of the School of Applied Social Studies Prof. Maire Leane at M.Leane@ucc.ie.

Appendix 2

IT Carlow Consent Form for Focus Groups/Interviews

- I …… agree to participate in a focus group/interview for the SOAR Project.
- The purpose and nature of the study has been explained to me in writing and I have had an opportunity to ask questions and seek clarification.
- I understand that participation is voluntary.
- I understand that even if I agree to participate now, I can withdraw at any time or refuse to answer any question without any consequences of any kind.
- I understand that I can withdraw permission to use data from my interview within two weeks after the interview, in which case the material will be deleted. This is in line with General Data Protection Regulations (GDPR) introduced in 2018.
- I give permission for my interview with the UCC Access and Participation Services research team to be audio-recorded.
- I understand that all information I provide for this study will be treated confidentially.
- I agree to maintain and uphold the complete confidentiality of all participants within the focus group.
- I will keep all information shared by participants during the focus group private and will not repeat or discuss outside of the focus group.
- I understand that anonymity will be ensured in the write-up by disguising my identity.
- I understand that disguised extracts from my interview may be quoted in progress reports, academic journals and/or the project website.
- I understand that a transcript of my interview in which all identifying information has been removed will be retained for a minimum of ten years, in line with UCC policy.
- I understand that I am free to contact any of the people involved in the research to seek further clarification and information.
- I am over the age of 18.

Signed: …… Date: ……

PRINT NAME: ……

Appendix 3

IT Carlow TtT Trainees Interview Guide

Consent and information check

Check participant received Information sheet – briefly explain purpose of interview

Check participant has completed consent form – explain the nature of voluntarism, i.e. rights withdraw without redress, etc.

Permission to record interview via MS Teams

Any questions?

Partnership approach

How does this partnership approach support your role within your organisation?

Noted and potential benefits of programme

What were the benefits for your organisation in participating in this programme?

Do you think that the TtT approach adopted for this Assistive Technology training programme works well?

Probe: uptake in participation, engagement from participants

Feedback from the participants (teachers, special needs assistants, parents) who undertook the Assistive Technology training?

Any challenges/barriers in delivery of the training programme?

Probe: face to face delivery of the training programme versus online delivery, COVID-19

Do you think this programme should be rolled out in other settings? If it was to be rolled out, what areas do you feel it should focus on or improve?

Needs analysis and improvements – looking ahead

Do you think that the AT training programme reflected the needs of those who undertook the training? (Teachers, special needs assistants, parents, principals)

Do you think that the TtT approach will work in terms of upskilling students in AT?

Should the TtT approach be maintained or should the training focus on students?

Did you feel that the supports, in the form of materials given to you, were sufficient reference tools?

What other information would you like included in the training?

How can the HE Outreach programmes support the training and use of AT in schools?

AT and students – looking ahead

How can AT be made more accessible in the classroom?

At what age and stage should students receive AT training?

Recommendations to improve programme

Would you recommend the programme to others?

Is this programme something you would like to continue to be involved in / to continue to participate in?

Summarise – How would you improve this programme as it currently operates?

Close

Any other comment you would like to add?

Was there anything I should have asked you that I didn't?

Any questions for me?

Thanks and appreciations.

Appendix 4

IT Carlow Focus Group TtT Team Interview Guide

Introduction

Thank participant for agreeing to the interview.

Informed Consent

Check participant received Information sheet – briefly explain purpose of interview.

Check participant has completed consent form – explain the nature of voluntarism, i.e. rights withdraw without redress, etc.

Permission to record interview via MS Teams

Any questions?

Development of the Assistive Technology (AT) training programme

What are the steps involved in designing an AT programme using the TtT approach?

Why was the approach to the current training programme chosen?

Should the AT training programme continue with its current focus of secondary school/university cohorts or widen to include the primary school cohort?

Focus of training programme on parents, special needs assistants, principals, teachers versus students?

Engagement with community partner/ schools

Please describe the process of engaging with the prospective educational training boards, schools and community partners

Did you encounter any challenges/issues in this process?

What approach worked best at engaging the educational training boards, community partners/ schools?

Impact of COVID-19 on this process

Delivery of AT training programme

What are the steps involved in delivering an AT programme using the TtT approach?

Any challenges/barriers in delivery of the training programme?

Impact of COVID-19 on this process

Impact of moving from face to face delivery to online delivery due to COVID-19 restrictions

How did the AT training programme engage the participants?

(what worked/what did not work) (face to face versus online)

Effectiveness of AT training programme (Anything you would change/do differently)

Close

Any comments?

Any questions?

Is there anything that I didn't ask you that I should have?

Thanks and appreciations

Appendix 5

Waterford IT: Consent Form Focus Group/Interviews

- I …… agree to participate in a focus group/interview for the SOAR Project.
- The purpose and nature of the study has been explained to me in writing and I have had an opportunity to ask questions and seek clarification.
- I understand that participation is voluntary.
- I understand that even if I agree to participate now, I can withdraw at any time or refuse to answer any question without any consequences of any kind.
- I understand that I can withdraw permission to use data from my interview within two weeks after the interview, in which case the material will be deleted. This is in line with General Data Protection Regulations (GDPR) introduced in 2018.
- I give permission for my interview with the UCC Access and Participation Services research team to be audio-recorded.
- I understand that all information I provide for this study will be treated confidentially.
- I agree to maintain and uphold the complete confidentiality of all participants within the focus group.
- I will keep all information shared by participants during the focus group private and will not repeat or discuss outside of the focus group.
- I understand that anonymity will be ensured in the write-up by disguising my identity.
- I understand that disguised extracts from my interview may be quoted in progress reports, academic journals and/or the project website.
- I understand that a transcript of my interview in which all identifying information has been removed will be retained for a minimum of ten years, in line with UCC policy.
- I understand that I am free to contact any of the people involved in the research to seek further clarification and information.
- I am over the age of 18.

Signed: …… Date: ……

PRINT NAME: ……

Appendix 6

Waterford IT: Focus Group ATTAINS Interview Guide

Introduction

Thank participant for agreeing to the interview.

Informed Consent

Check participant received Information sheet – briefly explain purpose of interview.

Check participant has completed consent form – explain the nature of voluntarism, i.e. rights withdraw without redress, etc.

Permission to record interview via MS Teams

Any questions?

Development of the Assistive Technology (AT) training programme

What are the steps involved in designing an AT programme for post-primary schools?

Why was the approach to the current training programme chosen?

Should the AT training programme continue with its current focus of post-primary students or should primary school students be included?

Focus of training programme on students with specific learning difficulties versus all students

Engagement with community partner/ schools

Please describe the process of engaging with the prospective schools and community partners

Did you encounter any challenges/issues in this process?

What approach worked best at engaging the community partners/schools?

Impact of COVID-19 on this process

Delivery of AT training programme

What are the steps involved in delivering an AT programme for post-primary schools?

Any challenges/barriers in delivery of the training programme?

Impact of COVID-19 on this process

Impact of moving from face-to-face delivery to online delivery due to COVID-19 restrictions

How did the AT training programme engage the students?

(What worked/what did not work) (face to face versus online)

How do you think the AT training programme affected students' motivation for homework/ study?

Effectiveness of AT training programme (Anything you would change/do differently)

Should this programme maintain its focus on students with specific learning difficulties or could it be extended to all students?

Impact on college readiness

Impact of training programme on preparing students for transition to college/university

Close

Any comments?

Any questions?

Is there anything that I didn't ask you that I should have?

Appendix 7

Waterford IT: Focus Group / Interview Guide Schools/Education Centres

Consent and information check

Include consent to record

Partnership approach

How does this partnership approach support your role within your school/organisation (for schools and WSCP only)?

Noted and potential benefits of programme

What were the benefits for your school/ organisation/students/child in participating in this programme?

Have you seen any improvements in your child's/student's homework/study as a result of participating in the programme?

Probe: Independence in using technology/ learning strategies to support

Feedback from the students/your child/your organisation with regards to the programme?

Do you think this programme would be suitable for all students or should it target only those with a specific learning difficulty?

Do you think this programme should be rolled out in other schools? If it was to be rolled out, what areas do you feel it should focus on or improve?

Needs analysis and improvements – looking ahead

Do you think that the AT training programme reflected the needs of students with specific learning needs?

Did you feel that the supports, in the form of materials given to you, were sufficient reference tools?

What other information would you like included in the training?

How can the HE Outreach programmes support the training and use of AT in schools?

How do you feel about a peer-to-peer mentoring programme in your school? This would look like: You pass on your AT knowledge to transition year students who could then mentor first, second and third year students.

Are you happy with how ICT skills are developed in your school around this?

Challenges to online lesson plans / impact of COVID-19 / sustainability

AT and students – looking ahead

How can AT be made more accessible in the classroom?

At what age and stage should students receive AT training?

Recommendations to improve programme

Would you recommend the programme to others?

Is this programme something you would like to continue to be involved in / your child (parent) to continue to participate in?

Summarise – How would you improve this programme as it currently operates?

Close

Any other comment you would like to add?

Was there anything I should have asked you that I didn't?

Any questions for me?

Thanks and appreciations.

Appendix 8

Waterford IT: Information Sheet for Parents of Under-18 Students

Information Sheet

Assistive Technology Training Programme Interview

Parents/Guardians of Student Participants under the Age of 18

Purpose of the Study

The SOAR Project is an inter-institutional collaboration on Access. It brings together the South Cluster – Cork Institute of Technology, Institute of Technology Carlow, Institute of Technology Tralee, University College Cork and Waterford Institute of Technology together with community partners to collaborate on devising and delivering strategies to increase access to higher education for under-represented groups. The purpose of this study is to evaluate the Assistive Technology outreach programmes. The Assistive Technology training programme was designed to encourage the use of and increase AT competency amongst participating students with specific learning difficulties. A training programme was developed that was designed to teach these students the skills to independently use assistive technology for the completion of their homework and study.

What will the study involve?

The study will involve your child participating in an online interview via Microsoft Teams to discuss their opinions, experiences, of taking part in the Assistive Technology training programme.

Why has your child been asked to take part?

Your child has been asked to take part in this study because they participated in Assistive Technology training as part of our training programme. In accordance with DCYA guidelines, persons under the age of 18 cannot consent to participate in social research without parental permission. Therefore, we are seeking your consent for your child to take part in this research. Assent (written confirmation of the participant's willingness to participate in the research) will also be sought from the student participant.

Do you have to take part?

No. Participation is voluntary. You will be asked to sign a consent form and assent will be sought from the participant. You and/or your child will also have the option of withdrawing before the study commences (even if you and your child has agreed to participate) or up until the online survey is submitted.

Will your child's participation in the study be kept confidential?

Yes. We will ensure that your child's identity will not appear in the final report or subsequent publications. Any extracts from the interview that are quoted, in any subsequent report and publications, will be entirely anonymous.

What will happen to the information that your child gives?

The data gathered will be kept confidential for the duration of the study. It will be securely stored on password-protected computers and only be available to the research team. On completion of the project, data will be retained for a minimum of a further ten years and then destroyed, according to policy at UCC.

What will happen to the results?

It is expected that results of this study will be published in a project report, academic articles as well as on the project website.

What are the possible disadvantages of taking part?

We do not envisage any negative consequences for your child in taking part.

Who has reviewed this study?

Approval has been given by the Social Research Ethics Committee of UCC.

Any further queries?

If you have any queries or concerns about this research, you can contact Dr Máire Leane, the principal investigator (PI) at m.leane@ucc.ie or you can contact the head of the School of Applied Social Studies Prof. Cathal O'Connell at c.oconnell@ucc.ie

Appendix 9

Waterford IT: Parents of Under 18 Student Consent Form

- I …… agree for my child, …… , to participate in a focus group for the SOAR Project.
- The purpose and nature of the study has been explained to me in writing and I have had an opportunity to ask questions and seek clarification.
- I understand that participation is voluntary.
- I understand that even if I agree to participate now, I can withdraw at any time or refuse to answer any question without any consequences of any kind.
- I understand that I can withdraw permission to use data from my child's interview within two weeks after the interview, in which case the material will be deleted. This is in line with General Data Protection Regulations (GDPR) introduced in 2018.
- I give permission for my child's group interview with the SOAR research team to be recorded.
- I understand that all information I provide for this study will be treated confidentially.
- I understand that anonymity will be ensured in the write-up by disguising my identity.
- I understand that disguised extracts from my interview may be quoted in progress reports, academic journals and/or the project website.
- I understand that a transcript of my interview in which all identifying information has been removed will be retained for a minimum of ten years, in line with UCC policy.
- I understand that I am free to contact any of the people involved in the research to seek further clarification and information.

Signed: …… Date: ……

PRINT NAME: ……

Appendix 10

Waterford IT: Under 18 Student Assent Form

- I …… agree to take part in an online interview for the SOAR project.
- The research has been explained to me.
- I have been able to ask any questions that I have about the research.
- I understand that participation is voluntary.
- I understand that even if I agree to take part now, I can stop at any stage or refuse to answer any questions up until the online survey has been submitted.
- I give permission for my group interview with the SOAR research team to be recorded.
- I understand that all information I provide for this study will be treated confidentially.
- I understand that anonymity will be ensured in the write-up by disguising my identity.
- I understand that disguised extracts from my online survey may be quoted in progress reports, academic journals and/or the project website.
- I understand that a transcript of my interview in which all identifying information has been removed will be retained for a minimum of ten years, in line with UCC policy.
- I understand that I am free to contact any of the people involved in the research to seek further clarification and information.

Signed: …… Date: ……

PRINT NAME: ……

Appendix 11

Waterford IT: Student Interview Guide

Consent and information check

Check participant received Information sheet – briefly explain purpose of interview.

Check participant has completed consent form – explain the nature of voluntarism, i.e. rights withdraw without redress, etc.

Permission to record interview via MS Teams

Any questions?

Prior knowledge of Assistive Technology

What was your knowledge of AT like before you undertook the training programme?

Were you aware of the AT technology that was available?

Did you use AT before you undertook the training?

(School, home etc)

AT Training Programme

What were the benefits of doing the AT training?

What were the challenges of doing the AT training?

Did you have enough time to practise the AT technologies being taught in the training?

Did you have enough support from the training programme facilitator?

Was the training programme what you expected it to be?

How could the AT training programme be improved?

Use of AT Now/Future

What is your knowledge of AT like now?

What is your comfort level with AT now? Has this changed since you did the training programme?

Has the AT training impacted you in terms of how you complete your homework/study and how long it takes you to complete it?

What is most beneficial about being able to use AT?

Are there any challenges in using AT?

Do you think that completing the AT training will benefit you into the future?

Do you think that AT will assist in your transition throughout school and into college?

Close

Is there anything else that you would like to add?

Is there anything that I should have asked you that I didn't?

Have you any questions for me?

Thanks, and appreciations.

Appendix 12

Sample Session Plan IT Carlow

Session	Specific learning outcomes for participants	Content description	Methodologies used to engage participants	Participants' activities, tasks or assignments to achieve the learning outcomes
Session 1	Identify and address gaps in current knowledge of assistive technology. Understand importance of using assistive technology (AT) in developing independence for children who have diverse abilities/ learning difficulties. Become familiar with the range of freeware and accessibility features to support students with writing difficulties and/or reading difficulties.	Outline of course. Meet course participants. Explaining requirements for participants to prepare a Learning Record in the form of a mind map. Review of participants' current awareness and/or use of assistive technology in class and for students' homework. Learn what is assistive technology (AT); advice on students using the computer well to make best use of AT; about free reading features/ programs on the iPad, phones and for Windows; learn to use Xmind mind mapping software for teaching students who are more visual learners; students planning their written work – essays, projects etc.; students making notes, studying and revising; learn to use features on Read and Write to support a students' planning needs, reading needs, writing needs. Discussion relating to participants' Learning Record mind map.	Lecture with group and whole class discussion; question and answer sessions; demonstrations; hands on training on individual computers; exploring free online resources	Brainstorm/mind map pre course knowledge of assistive technology. Learning to use free mind mapping software, Xmind. Getting phone, iPads and windows to read text aloud. Getting free text-to-speech software to read aloud online and offline curricular materials (incl. Irish!)
Session 2	To learn to use the reading and writing support features in Read & Write literacy support software; speech to text software; Inspiration Mind mapping software; AT for students with dyslexia.	Review and reflect on previous sessions training. Review how to get access to electronic learning materials and texts and how educators can make their teaching and learning materials more accessible. Explore the reading and writing support tools in Read & Write literacy support software. Review how to use this technology in the classroom and for homework. Explore Inspiration mind mapping software. Discussion relating to participants' Learning Record mind map.	Lecture with group and whole class discussion; question and answer sessions; demonstrations; hands-on training on individual computers; exploring free online resources.	Hands-on computers to get Read & Write to: read text aloud; use screen shot reader; change the voice on the reader; use Speechmaker to create a sound file from chosen text; use the dictionary and picture dictionary; use the study skills tool bar to create a vocabulary list; use text prediction, spellchecker and the homophone support tool and use Inspiration mind mapping. Use different speech-to-text software and learn to train a voice profile.
Session 3	Become familiar with the range of Assistive Technology available to support the needs of students who are deaf/ hard of hearing. To identify which AT used to support students who have literacy difficulties (from Day 1 & 2) could be used effectively by students whose language development has been impacted negatively by their hearing loss.	Review and reflect on previous sessions training. Learn about features in iPads and on Windows to support need of students who are deaf/hard of hearing. Learn about students using assisted listening systems in the classroom and tips for teachers/ SNAs on same, in order for them to learn how to make more accessible visual learning materials. Discussion relating to participants' Learning Record mind map.	Lecture with group and whole class discussion; question and answer sessions; demonstrations; hands-on training on individual computers; exploring free online resources.	Hands-on use of literacy support tools relevant to students who are deaf/hard of hearing. Exploration of supported listening systems and practical implications in the classroom. Creation of very visual teaching materials on a specific subject aimed at introducing new vocabulary and concepts using previously acquired AT.

Appendix 12 continued

Sample Session Plan IT Carlow

Session	Specific learning outcomes for participants	Content description	Methodologies used to engage participants	Participants' activities, tasks or assignments to achieve the learning outcomes
Session 4	Become familiar with the range of assistive technology available to support the needs of students who have a physical disability. Explore Universal Design for Learning (UDL)	Review and reflect on previous training with respect to our traditional teaching and learning methods. Learn about features in iPads and on Windows to support need of students who have a physical disability. Review access to the curriculum for students with physical diverse abilities via alternative media formats, e.g. electronic texts. Discussion relating to participants' Learning Record mind map.	Lecture with group and whole class discussion; question and answer sessions; demonstrations; hands-on training on individual computers; exploring free online resources.	Adjusting keyboard, mouse and screen settings to meet the needs of student with a physical disability. Creating a system to accept typed homework in school. Exploring possibilities of sharing accessible teaching/learning materials.
Session 5	Become familiar with the range of Assistive Technology available to support the needs of students who are blind/ visually impaired.	Learn about free screen magnification and alteration options for the iPad and Windows; magnification options for magnifying electronic and hard copies of text incl. Zoomtext. The introduction and uses of a variety of scanning, typing and other useful apps. The importance of screen reading software such as VoiceOver and Text to Speech. Using alternative learning materials and texts (electronic, audio, large print). Discussion relating to participants' Learning Record mind map.	Lecture with group and whole class discussion; question and answer sessions; demonstrations; hands-on training on individual computers; exploring free online resources.	Adjusting screen magnification settings and contrasts in Windows and on iPad. Use of internet magnification tools. Use of screen readers and demonstration of same. Mind map a plan for educators' next steps in using more AT in the classroom and for students' home work.

All links to software/hardware to be shared with educators following the sessions.

Evaluation forms shared with educators after each session and used for immediate review of the session and overall review of the programme.

Appendix 13

Session Plan Waterford IT

Part 1: Basics of Learning Platforms and Introduction to Free Assistive Technology

Week 1 The Basics of Microsoft Office 365 / Basics of Google Applications
- Accessing Office 365 / Google applications
- Accessing personal storage (One Drive) / (Google Drive)
- Folder/ file management; creating folders / subfolders and saving / moving files to new folders.
- Uploading files to One Drive / Google Drive

Week 2–3 Cont the Basics of Microsoft Office 365 / Basics of Google Applications and Office 365 Accessing Microsoft Word Online; creating new documents and saving to One Drive.
Spelling, Grammar, Punctuation
G-Suite; Built in Features of Google Docs Free built-in features available within the Google Docs; Spelling, Grammar, Punctuation, Dictionary and Translate Features.
Introduction to Free Assistive Technology
- Office 365: Electronic Readers – Immersive Reader

G-Suite:
- Natural Reader; Free Electronic Reader Software Chrome Extension
- Claro Read for Chrome: Free Chrome Extension (Dyslexic Font, Ruler, Background Colour and TTS)

Word Prediction: Built-in Features Windows
- Word Prediction; 'Show Text Suggestions as I Type'

Week 3 Introduction to Dictation / Voice Typing
Dictation / Voice Typing: Free built-in accessibility features available within the Office 365 package / Google applications:
- Office 365; Dictation (Speech to Text)
- Google Docs Voice Typing

Week 4 Using iPhone/ iPad/ Android Built-in Accessibility Features – Read aloud features
Free Phone Applications to download and use: iPhone/iPad Seeing AI App | Android LiveTranscribe (Scan short text / document / image / whiteboard / pdf, etc . (Transcribe your work on the go) – Android users only and text will be read aloud instantly) – iPhone users only Microsoft Office Lens; Creating More Accessible Files (Office 365 Account Required)
- Scan class notes / whiteboard notes to accessible formats
- Using your ERs to read aloud scanned notes

These features will be demonstrated and an opportunity to use the technology to aid homework completion / study will be provided.

Week 5 Introduces Free AT Software for Mind Mapping Introduction to the X-mind free Mind Mapping softwa
- Introducing X-mind Mind Mapping
- Downloading the software
- Key features
- X-mind demonstration

Week 6 Introduces Free AT Software and Applications cont…
Windows Users:
- My Study Tool Bar – Feature; Balabolka (create mp3 file to listen back to notes on the go)
- Grammarly (spell checker, proof reader)
- Free electronic readers for different file formats: MS Word Adobe / PDF / Microsoft Edge

Appendix 13 continued

Session Plan Waterford IT

Part 2: Preparation for 3rd level and State Examinations (5 week programme)

Week 1 Preparation for State Examinations Exam Preparation

Exam Pens are being introduced into the Junior and Leaving Cert state examinations replacing the Human Reader accommodation in schools.

- Exam Reader Pen Training
- Tutorial
- Demonstration
- Independent use of Exam Reader Pen with sample examination papers
- Guidelines for students using the Exam Reader Pen (at higher education) schools to adapt same
- Reflection

Week 2 Preparation for Higher Education

Promote college readiness amongst students with learning diverse abilities; introducing senior cycle students to AT supports available to students within higher education.

- C-pen Training
- Tutorial
- Demonstration
- Independent use of C-pen reader pen
- Reflection

Week 3 Preparation for Higher Education cont…

Promote college readiness amongst students with learning diverse abilities; introducing senior cycle students to AT supports available to students within higher education.

- ClaroReadPro Training
- Tutorial
- Demonstration
- Independent use of Claro Pro
- Reflection

Week 4–5 *Optional: include some training from Phase 1*

Application of skills independently with continued support from AT facilitator

- Reflection on Programme
- Feedback and Evaluation

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