# The Development of an eLearning Package for Teachers to Help Students Stay on Task and Transition between Tasks

## Full Report

Dr. Satine Winter

Dr. Jill Ashburner

Stephanie Callaghan

Natasha Bobir

April **2018**

AutismCRC

Australian Government
Department of Industry,
Innovation and Science

Business
Cooperative Research
Centres Programme

autismcrc.com.au

# The Development of an eLearning Package for Teachers to Help Students Stay on Task and Transition between Tasks

## Full Report

**Research team:**

**Dr. Satine Winter,**
Research Project Officer, Autism Queensland

**Dr. Jill Ashburner,**
Manager Research and Business Development, Autism Queensland

**Stephanie Callaghan,**
Research Officer, Autism Queensland

**Natasha Bobir,**
Research Officer, Autism Queensland


**Digital Creative Arts Team:**

**David McCartney**
Manager Vocational Programs, Studio G

**Anthony Stone**
Filmmaker and Studio G Mentor, Studio G

**Adam Shepherd**
Filmmaker, Studio G

**David Smith**
Illustrator, Studio G

**Jermu Hautsolo**
Illustrator and Studio G Mentor

**Elizabeth Scales**
Actor

**Declan Mount**
Actor

AutismCRC

# Acknowledgements

# A note on terminology

The term autism spectrum disorder (ASD) is used only when discussing the diagnostic criteria described in The Diagnostic and Statistical Manual of Mental Disorders: DSM 5 (American Psychiatric Association, 2013). Student participants in this research have been referred to as students on the autism spectrum, or students on the spectrum, throughout. At the time of writing, this is the preferred terminology within the Cooperative Research Centre for Living with Autism (Autism CRC). However, it is acknowledged that the language with which the autism spectrum is described is rapidly evolving.

**The Cooperative Research Centre for Living with Autism (Autism CRC)**

The Cooperative Research Centre for Living with Autism (Autism CRC) is the world's first national, cooperative research effort focused on autism. Taking a whole-of-life approach to autism focusing on diagnosis, education and adult life, Autism CRC researchers are working with end-users to provide evidence-based outcomes which can be translated into practical solutions for governments, service providers, education and health professionals, families and people on the autism spectrum.

**autismcrc.com.au**

AutismCRC

# Table of contents

# Abstract

Students on the autism spectrum have been found to benefit from Structured Teaching strategies such as visual schedules and work systems within their learning contexts (Mesibov, Shea, & Schopler, 2004). This project aimed to develop an eLearning package to increase the accessibility of information on Structured Teaching strategies for teachers in mainstream classrooms. The eLearning package was developed based on the results and paper-based resources developed for Autism CRC Project 2.011RC: Helping students to say on task and move between tasks. The eLearning package included: (a) two short animated videos (PowToon™), (b) three PowerPoint™ presentations to provide relevant background information and research (c) five quick reference guides with implementation checklists, (d) downloadable templates of visual schedules and work systems, and (e) video-models of a teacher and a student talking about the way that visual schedules and work systems help them in the classroom.

A mixed methods design including the use of short surveys and focus groups was used to gather feedback on the eLearning package from teachers in mainstream classrooms. Twenty-nine teachers who attended a professional development showcasing the eLearning package, and four teachers who utilised the package in their classrooms, provided feedback. Feedback was gathered on (a) the extent to which the resources in the eLearning packages assist teachers to understand Structured Teaching (b) the extent to which the resources in the eLearning packages assist teachers in implementing Structured Teaching approaches in mainstream classrooms, and (c) the feasibility of implementing strategies illustrated in the eLearning package including visual schedules and work systems in mainstream classrooms.

The quantitative data were analysed through descriptive statistics. The transcribed focus group data and open-ended survey questions were analysed using content analysis. The eLearning resources were refined according to the teacher feedback. Feedback on the classroom implementation of the eLearning Package revealed four common themes: (a) issues with time (b) teacher engagement with the eLearning resources, (c) issues with the social validity of strategies, and (d) outcomes for teachers and students. Overall, participants rated eLearning resources as being helpful in explaining visual schedules and work systems.

AutismCRC

# 1. Introduction

Students on the autism spectrum who attend mainstream schools may find it challenging to engage in their learning due to differences in communication and restricted and repetitive behaviours (American Psychiatric Association, 2013). These students may also demonstrate executive functioning weaknesses which present as difficulties in transitioning between tasks, commencing a new task, and completing complex tasks that need to be broken down into steps (Hill, 2004; Milley & Machalicek, 2012). Research suggests that students on the spectrum often lack the flexibility to cope with transitions from one activity to another during the school day. For example, a qualitative review that described the school experiences of students on the spectrum by Church, Alisanki, and Amanullah (2000), indicated that students on the spectrum are often challenged by transitions and changes at school: "Transitions and changes required careful planning on the part of parents and teachers. Failing to follow through with a plan that had been made would end in anxiety, high frustration, verbal abuse or tantrums for most children" (p. 17). Parents of young children on the spectrum interviewed by Stoner, Angell, House and Bock (2007) made similar comments: "we had an issue with the transition from one activity to another, going to recess and coming back, and that transition was a challenge" (p. 31).

Students on the spectrum may be overly reliant on prompting and redirection from teachers to sustain their attention towards completing classroom tasks (Cihak, 2011; Dettmer, Simpson, Myles, & Gantz, 2000). Moreover, students on the spectrum may also demonstrate problems in self-regulating their behaviour and emotions (Ashburner, Ziviani & Rodger, 2010) and in the absence of appropriate supports, these problems may lead to meltdowns, non-compliance and aggression, especially when transitioning between tasks (Schreibman, Whalen, & Stahmer, 2000; Stoner, Angell, House & Bock, 2007). These difficulties can also be stressful for teachers who must manage the challenging behaviours of these students, while concurrently supporting their academic achievement and social-emotional development (Gregor & Campbell, 2001).

## 1.1 Structured Teaching

Strategies to assist students on the spectrum to extend their capacity for self-regulation and independence are likely to enhance their learning engagement in mainstream classrooms. Structured Teaching or TEACCH (Treatment and Education of Autistic and Related Communication Handicapped Children; Mesibov and Shea, 2010) is a well-established approach to facilitating engagement in learning and transitions between learning tasks. Visual schedules and work systems are two strategies derived from the principles of Structured Teaching, which aims to

AutismCRC

help students engage in tasks and transition between tasks (Mesibov, Shea, & Schopler, 2004). Specifically, visual schedules provide explicit cues to prepare students for transitions within the school day, whereas work systems inform the student about "what to do", "how long for", "when the task is finished", and "what happens next". Visual schedules and work systems are often used in autism-specific schools and special schools, but have been less widely used in mainstream classrooms.  A recent study by Macdonald, Trembath, Ashburner, Costley and Keen (2018) commissioned by Autism CRC indicated that the use of visual schedules and work systems led to improvements in on-task behaviours for students on the autism spectrum in mainstream classrooms.

## 1.2    Visual Schedules and Work Systems

The current project evolved from the Autism CRC research project: Helping students to stay on task and move between tasks, which involved the use of visual schedules and work systems in mainstream classrooms. Macdonald et al. (2018) revised, adapted, and extended upon the initial work of Kaaren Haas' Structured Teaching Toolkit, resulting in the product, "Finished! On-task Toolkit: A teacher's guide to using visual schedules and work systems in mainstream classrooms." This paper-based toolkit was developed to assist mainstream teachers to use Structured Teaching strategies in their mainstream primary classrooms.

# 2.    Development of eLearning Package

With the aim of making Structured Teaching approaches more accessible to time-poor teachers and more motivating for students, this project involved converting this paper-based toolkit into a more dynamic online eLearning Package. The eLearning Package focused on two strategies of Structured Teaching, visual schedules and work systems, and included resources ranging from templates to PowerPoints™ to videos (see Table 1). Each part of the learning resource was designed to be complementary and to facilitate teachers' ease-of-access to information on visual schedules and work systems, while promoting their learning about Structured Teaching. The characters of 'Ed the Schedule' (visual schedules) and 'Finn the Work System' (work systems) were created to promote easy identification of each strategy and increase attention and engagement by users of these eLearning resources.

**Table 1:** Summary of eLearning package

| Resource Title | Number of Resources | Topic | Medium |
|---|---|---|---|
| ▪ Structured Teaching: Visual Schedules in the Mainstream Classroom <br><br> ▪ Structured Teaching: Work Systems in the Mainstream Classroom | 1 <br><br><br><br> 1 | Short animated videos covering the principles behind Structured Teaching and the use of such strategies for teachers in mainstream classrooms while catering to diverse learning needs. | PowToon™ |
| ▪ Visual Schedules Overview and Templates <br><br> ▪ Visual Schedules Transition Template <br><br> ▪ Work Systems Overview and Templates | 6 <br><br><br> 1 <br><br> 6 | Templates for visual schedules and work systems that could be downloaded for use by teachers in the mainstream classroom and edited to suit the needs of the student or whole-of-class. | Downloadable templates |
| ▪ Structured Teaching PowerPoint™ <br><br> ▪ Visual Schedules PowerPoint™ <br><br> ▪ Work Systems PowerPoint™ | 1 <br><br> 1 <br><br> 1 | Instructional PowerPoint™ presentations aimed at professional development of teachers in mainstream classrooms. <br><br> Translation of *Finished! On-task Toolkit: A teacher's guide to using visual schedules and work systems in mainstream classrooms* into instructional steps. <br><br> The Structured Teaching PowerPoint™ presentation includes introductory background information and research. <br><br> The visual schedules and work systems PowerPoint™ presentations include instructional vignettes on implementation in the mainstream classroom. | PowerPoint™ |
| ▪ Structured Teaching Quick Reference Guide <br><br> ▪ Visual Schedules Quick Reference Guide <br><br> ▪ Visual Schedules Examples Quick Reference Guide <br><br> ▪ Work Systems Quick Reference Guide <br><br> ▪ Work Systems Examples Quick Reference Guide | 1 <br><br><br> 1 <br><br><br> 1 <br><br><br> 1 <br> 1 | Brief summaries of the strategies and a checklist for teachers were provided. <br><br> Example quick reference guides include visual images and brief summary instructions of examples of visual schedules and work systems. | Single page document (double sided) |
| ▪ Video-Model of Visual Schedules and Work Systems – Teacher <br><br> ▪ Video-Model of Visual Schedules and Work Systems - Student | 1 <br><br><br> 1 | Teacher (actor) demonstrating implementation of visual schedules and work systems in a classroom. <br><br> Student (actor) discussing how using visual schedules and work systems help stay on task and move between tasks. | Video-files |

# 3. Gathering Feedback on the eLearning Package

In order to investigate the utility of the eLearning package with the aim of refining it, the following research questions were considered:

- To what extent do the resources in the eLearning packages assist teachers to understand Structured Teaching?

- To what extent do the resources in the eLearning packages assist teachers in implementing Structured Teaching approaches in mainstream classrooms?

How feasible is it to implement Structured Teaching strategies illustrated in the eLearning package including visual schedules and work systems in mainstream classrooms?

## 3.1 Participants

Teachers from two Brisbane co-educational Christian schools participated in the research project. School A was a K-12 Lutheran school of 740 students (approximately 470 in the junior school). School B was a Prep-Year 12 Anglican school of 1600 students (approximately 450 in the junior school).

Professional development sessions to showcase the eLearning resources were conducted on-site at the two participating schools. A total of 29 teachers who participated in these sessions provided feedback on the eLearning resources though a post-professional development survey.

Three teachers from School A and two teachers from School B also volunteered to trial visual schedules and work systems in their primary school classrooms after reviewing the eLearning resources and to participate in focus groups to provide feedback on their experiences. One teacher from School A was absent on the day of the scheduled focus group, bringing the total number of participating teachers to four, including two females and two males. They were aged between 25 and over 45 years and had between 11 years and over 15 years teaching experience. The inclusion criterion for participation by teachers in the focus groups was to have at least one student on the spectrum in their classroom. These participants had between one to three students on the spectrum in their classroom.

## 3.2 Setting

The professional development sessions used to showcase the eLearning resources and the focus groups took place on-site at the two participating schools.

## 3.3 Materials

Participating teachers were provided with a folder of materials (consent forms, laminated 'To Do' and 'Finished' labels, printouts) and a USB with the versions of eLearning resources that were available at the time. The resources included the introductory PowToon™ presentations, background and research PowerPoint™ presentations, quick reference guides and downloadable templates, as outlined in Table 1. The video models were unavailable at the time of the professional development sessions, as they were still being produced by Studio G.

## 3.4 Procedure

Ethical clearance for this research evaluation was obtained from The University of Queensland Ethics Review Committee (approval number 2013001446). All participants provided written informed consent.

With the aim of disseminating information on the eLearning resources for the purposes of gathering feedback, the research project officer facilitated professional development sessions with the educational staff from the two participating schools. These sessions involved showing, discussing, demonstrating and answering questions about the eLearning resources. This included demonstration of the use of different types of resources such as folders, clip-boards and plastic sleeves when developing work systems for individual and group activities. Educational professionals including teachers and teacher aides and leadership staff were invited to attend the professional development sessions. School B also invited interested parents/family members related to student/s on the spectrum to attend the professional development session. Twenty-nine of the teachers provided feedback about the eLearning resources via a written feedback form.

Several weeks after the professional development, further feedback was gathered through focus groups of teachers who trialed the resources in their classroom. The teacher feedback gathered through the post-professional development surveys and the focus groups was used to revise the eLearning resources so that they were more relevant and practical for teachers to implement.

## 3.5 Data Collection

A mixed-methods approach was used to gather feedback about the eLearning Package. The post-professional development surveys included a total of seven questions, five of which were answered using a 5-point Likert scale ranging from very low to very high. Three of these five questions asked the participating teachers to rate their current levels of knowledge on autism,

Structured Teaching for students on the autism spectrum and Universal Design for Learning, while two questions asked them to rate how the professional development sessions showcasing the eLearning resources supported their understanding of visual schedules and work systems. A further two open-ended questions asked for feedback on what was most beneficial about the professional development session and what could be improved.

Two focus groups (one at each school) were conducted with four participating teachers who trialed the Structured Teaching strategies in their classrooms several weeks after the professional development session. The participants completed short demographic questionnaires including information about their teaching experience, and the students on the spectrum and students with other additional learning needs in their classroom. The first focus group questions concerned the teacher's current level of knowledge about autism and teaching students on the spectrum, their level of knowledge about Structured Teaching for students on the spectrum prior to the research project, and their current level of knowledge about Structured Teaching for students on the spectrum. Teachers were also asked about students in their class who were experiencing difficulty staying on task and transitioning between tasks. The second focus group questions discussed the effectiveness of the eLearning package in (a) helping teachers to understand and implement visual schedules and work systems; (b) part/s that they found most useful; (c) part/s that they would recommend changing; (d) their thoughts on using visual schedules and work systems in individual, group and whole class contexts in the classroom; and (e) the utility of visual schedules and work systems in helping students stay on task, transition between tasks and in decreasing challenging behaviour. Teachers were also invited to discuss their general experiences of implementing visual schedules and work systems and the likelihood of using these strategies in the future.

## 3.6 Data Analysis

The quantitative data was analysed using descriptive statistics. The focus group data was transcribed verbatim and analysed using content analysis, which is a method of eliciting contextual meaning from text through the development of emergent themes (Patton, 2015). The data from open ended questions on the surveys was similarly analysed using content analysis.

## 3.7 Findings

### 3.7.1 Feedback from Surveys Following the Professional Development

Twenty-nine participants provided feedback on the professional development, including 11 from School A, and 18 from School B. The majority of participants (see Table 2) rated their current

AutismCRC

levels of knowledge about autism and teaching students on the spectrum as neutral or high. Similarly, the majority rated their current levels of knowledge about Structured Teaching as neutral or high. Responses regarding knowledge about Universal Design for Learning varied from very high to very low, with many participants rating their knowledge as neutral. Overall, participants rated the professional development session as being helpful in explaining both visual schedules and work systems, with most participants rating the sessions as high or very high. The session on work systems received a higher number of very high ratings than the session on visual schedules.

**Table 2.** Feedback on professional development sessions *(N = 29)*

| Question | Missing responses n (%) | Very low n (%) | Low n (%) | Neutral n (%) | High n (%) | Very High n (%) |
|---|---|---|---|---|---|---|
| Q 1.  How would you rate your current level of knowledge about autism and teaching students with autism? | 2 (7%) | | 2 (7%) | 11 (38%) | 11 (38%) | 3(10%) |
| Q 2.  How would you rate your current level of knowledge about Structured Teaching for students with autism? | | | 3 (10%) | 13 (45%) | 11 (38%) | 2 (7%) |
| 3. Using the scale, how would you rate your current level of knowledge about Universal Design for Learning? | 1 (3%) | 1 (3%) | 6 (21%) | 13 (45%) | 6 (21%) | 2 (7%) |
| 4. How helpful was this professional development session in explaining how to use visual schedules in your classroom? | | | | 1 (3%) | 14 (48%) | 14 (48%) |
| 5. How helpful was this professional development session in explaining how to use work systems in your classroom? | 1(3%) | | | 1 (3%) | 10 (34%) | 17 (59%) |

In response to the open-ended question, "What did you find the most beneficial about the professional development session?", eighteen participants (62%) described the viewing of the many different examples of visual schedules and work systems as being the most beneficial

aspects. Five participants (17%) commented on the benefits of learning about work systems, and four (14%) made positive remarks about the content of the PowerPoint™ in general. Three participants (10%) identified the PowToon™ videos as beneficial. Three participants (10%) also commented on the value of the handouts for future reference. Two participants (7%) valued learning more about visual schedules. Learning about ways to individualize the approaches was valued by another two participants (7%). One participant felt that the presentation confirmed processes and routines that she was currently using in her classroom.

In response to the open-ended question "How could this professional development session be improved?", five participants (17%) suggested more time for discussion about the resources, while four participants (14%) suggested more hands-on exploration of the resources. Three participants (10%) suggested the PowerPoint™ was a bit too long or provided too much information for one session. Two participants said that video models on ways that Structured Teaching can work in a classroom (video files are under production by Studio G, but were not available at the time of the professional development). There were a number of other suggestions by one participant only including (a) the need to adapt resources for a Languages Other Than English (LOTE) class, (b) greater focus on curriculum, (c) making the PowerPoint™ clearer, (d) information on handouts was hard to read, (e) use of symbols in work systems for young students, and (e) emailing rather than presenting the information.

### 3.7.2 Focus Group Feedback Following Trial of the eLearning Resources

**Knowledge of Autism and Structured Teaching**

All four participants reported a lower level of knowledge about autism or Structured Teaching, in contrast to their knowledge about the student/s on the spectrum in their classroom. For example, a teacher from school B remarked:

*My knowledge of autism itself, I feel like I've got a very superficial understanding, from a textbook perspective. If I was rating it on the specific autistic child in my class, I feel like it will be high or very high.*

On reflection, all participants recognised Structured Teaching strategies that were already evident in their pedagogy during and after engagement with this research project. A teacher form School B noted:

*I felt happy that there was some things … that we're already doing that maintain his security in the classroom and his belonging.*

Some teachers noted, however, that they had refined these strategies after learning more about Structured Teaching:

*I've done the visual scheduling for quite a few years but having listened to you, I've definitely changed a little bit to putting numbers… I definitely noticed a big difference with newer ASD students responding to that very well. I can just say we are up to number two on the board … that definitely helps* (School A teacher).

Capacity of their students on the spectrum to stay on task:
All participants reported that their students on the spectrum experienced difficulty staying on task:

*He (student) really struggles in the classroom when he's given more than one instruction* (School B teacher).

They suggested that this may be a result of characteristics of autism, the task/activity attempted, teacher strategy, adjustments, and the learning level or the social, emotional, learning or behaviour difficulties of these students. All participants reported that their students on the spectrum experienced difficulty transitioning between tasks. The learning environment was perceived to be a factor affecting the success of transitions for both students on the spectrum and the class as a whole, with more difficulty demonstrated in unstructured environments. For example, a teacher from school B commented on the way that her students became distracted when transitioning in outdoor, unstructured environments:

(About learning environments affecting transitions) ... *Getting distracted by … running around a pole three times before continuing with the rest of the group, was always, that outdoor, unstructured environment*. (School B teacher)

Participants described their use of the Structured Teaching strategies as influenced by parent preferences which did not always align with their own knowledge and experience of the student:

*Timeframes weren't a big thing for him, because he generally didn't do the work anyway …He would basically pick and choose what he wanted to do and I just had to be okay with that, because the parent's focus was more on his emotional wellbeing* (School B teacher).

**Feedback on the eLearning Resources**

Four common themes on the utility of the eLearning package strategies emerged including (1) issues with time, (2) teacher engagement with the eLearning resources, (3) issues with the social validity of strategies for individual students, and (4) outcomes for teachers and students.

**Theme 1: Issues with Time**

All participants reported that time was the main factor affecting the use of visual schedules and work systems in the classroom. Participants reported saving time by accessing the eLearning resources to implement visual schedules and work systems in the classroom once the preparation and planning was undertaken.

> *Definitely good to access it online …we are just constantly on the computer or making resources and things* (School B teacher).

However, all participants also reported a lack of time to adequately view the eLearning resources or to adequately attempt to implement the strategies in the classroom:

> *When I use that (visual schedules) next year… (with) the number of different subjects we have, finding the cards and putting them up is too time consuming* (School B teacher).

Moreover, participants reported the need to continually make adjustments to the strategies being implemented to suit the needs of their student on the spectrum to the detriment of other students in the classroom. The time taken to make the resources and to teach the student to use visual schedules and work systems was perceived to be a disadvantage of the use of Structured Teaching.

In spite of the issues with time, teachers said that it was "very likely" that they would continue to use visual schedules and work systems.

> *The visual schedules…I couldn't imagine not using it. In terms of work schedules… I would be looking for ways in which I could use that, not just for children with a diagnosis* (School A teacher).

**Theme 2: Teacher Engagement**

All participants demonstrated a willingness to engage in learning new strategies to cater to their students on the spectrum. They described improvements in their level of knowledge of Structured Teaching through their engagement with the eLearning resources. A teacher from school B commented:

> *I found it (professional development) really helpful… I felt like after having the PD, and looking through the resources and making a plan for what I want to do with x (student), I felt like I gained a little bit of control.*

AutismCRC

All participants expressed a strong preference for face-to-face professional development, rather than viewing these resources online:

*The actual PowerPoints™ have lots of relevant information* (School B teacher).

*The presentation, especially listening to you with your firsthand knowledge …was good I think* (School A teacher).

Two participants recommended the use of webinars (two separate sessions) to present the eLearning Package. Positive responses to the eLearning resources were reported for the PowToon™ presentations, the quick reference guides, the downloadable editable templates and the PowerPoint™ presentations when they were delivered by a presenter.

**Theme 3: Issues with the social validity of strategies**

Several participants raised concerns from the student perspective about the effect of exclusion in the mainstream classroom in implementing visual schedules or work systems. These concerns related to difficult behaviours demonstrated by students on the spectrum upon implementation of the visual schedule or work system (e.g. throwing the materials) and verbally or physically expressing to the teacher how they felt.

*I was doing an individual schedule on the right (of his desk) … but he just didn't want that … and looking back I think it's because it actually showed him as being different to others.* (School A teacher).

Consequently, teachers then made further adjustments to the resources and how they were implemented (e.g., using post-it-notes and sticking them on the desk/activity discreetly).

*So, it just depends on the student whether I actually use something on the desk…if they are okay with it or just use Post-it notes. It just depends on the particular student* (School A teacher).

Teachers commented that the colours of some of the downloadable templates may need to be changed:

*We have a behaviour management system that uses sort of traffic light colours… I'm just wondering whether that might be sort of confusing for some of the kids and whether some different colours might be better* (School A teacher).

**Theme 4: Outcomes**

Participants reported outcomes of the eLearning resources that related to both the student and the teacher. Positive student outcomes included whole-of-class benefits of using visual schedules through enhancement of the students' understanding and knowledge of routines in the mainstream classroom.

*The principles of what you are doing (visual schedules) helps the child not be surprised by things that are going to happen* (School B Teacher).

Participants perceived the most favourable outcome to be the effectiveness of work systems in helping students to stay on task.

*(Structured work systems) are very useful for keeping him guided and being able to refer him back to his folder when he's wandering round the classroom* (School B teacher).

*What I took out of your presentation was making sure it (the work system) was just daily… and the feedback that I got from my ASD child is that he really enjoyed having that there* (School B teacher).

These systems were beneficial not only for individual students, but also for small groups or the whole class. Common themes regarding the benefits of work systems included using them as a teaching tool to improve planning, prioritising, responsibility for learning, promoting independence and increasing self-regulation. Students on the spectrum responded positively to the visual presentation of their progress on the work system, and their experiences of success and independence when completing learning tasks. A school B teacher remarked:

*I felt like with having something like that in place, it allows me to step back. It helps him to feel some success …he's wanting to be independent* (School B teacher).

Positive teacher outcomes included reductions in teacher time spent with the student on the spectrum, once they understood and were familiar in using visual schedules or work systems:

*He was able to stay on track …without me needing to be there all the time* (School B teacher).

However, the amount of time taken by the teacher to implement the strategies (e.g. making resources, adjustments, teaching student) was reported as a negative outcome.

AutismCRC

Three of the four participants reported an increase in their level of knowledge about Structured Teaching as a result of participating in the research project and using the eLearning resources (see Table 3).

**Table 3.** Participants' responses to levels of knowledge of autism and Structured Teaching

| Question | Very low n (%) | Low n (%) | Neutral n (%) | High n (%) | Very High n (%) |
|---|---|---|---|---|---|
| Q 11.  B. Using the scale, how would you rate your current level of knowledge about autism and teaching students with autism? | | | 3 (75%) | 1 (25%) | |
| Q 12.  B. How would you rate your level of knowledge about Structured Teaching for students with autism prior to this research project? | 1 (25%) | 1 (25%) | 1 (25%) | 1 (25%) | |
| Q 28.  How would you now rate your current level of knowledge of Structured Teaching using visual schedules and work systems? | | | | 4 (100%) | |

## 3.8   Refinements to eLearning Resources Based on Participant Feedback

The following refinements were made based on the feedback:

▪ Because some teachers commented on the confusion associated with use of colours that were also used in their behaviour management systems in the school or home setting, the downloadable templates were simplified with most colours removed to enable them to be edited according to the colour preferences of the student or school.

▪ Given that there was feedback suggesting that the PowerPoints™ were too long, too detailed or unclear, revisions to the PowerPoints™ presentations included reductions in length and references to research, and improvements in clarity of expression (visual images, writing, font, layout, presentation).

▪ The teachers' knowledge about Universal Design for Learning after professional development was variable. Additionally, teachers tended to implement individualised work systems that some students found stigmatising, rather than using more inclusive whole-of-class strategies, which are consistent with Universal Design for Learning. Consequently, the adapted PowToon™ videos also included of a separate slide on Universal Design for

AutismCRC

Learning. Whole-of-class implementation is also likely to reduce the time needed to make adaptations for individual students.

- Although one participant suggested emailing the PowerPoint™, five teachers said that they would like more interactive sessions and discussion about Structured Teaching approaches. It is therefore suggested that it may be preferable for the eLearning resources to be discussed by teachers in face-to-face meetings or professional development sessions, rather than just asking teachers to access the resources online.

- Eighteen teachers described an appreciation of the demonstration of resources such as the use of different types of resources such as folders, clip-boards and plastic sleeves when developing visual schedules and work systems for individual and group activities. Two participants also commented that video models of the way that Structured Teaching can work in a classroom would be beneficial. Video vignettes embedded within the PowerPoints and video-models of both a teacher and student developed by Studio G therefore include demonstrations of the way that these different types of resources can be used. Photographs of the resources are also included in the quick reference guides depicting examples of visual schedules and work systems.

# 4. Limitations

This study's small sample size limits the generalisability of the findings within the same schools and to other schools. As the teachers who participated in the study did so on a voluntary basis, it is possible that these teachers tended to be more proactive than other teachers, thus introducing a potential bias towards more positive responses. In order to minimise this effect, the teacher participants were reminded prior to participation to provide feedback on aspects of the eLearning Package that needed improving in addition to aspects that worked well. The time of year (close to the end of the school year) was also a limitation as some teachers had insufficient time to fully explore a range of ways of implementing the Structured Teaching strategies. Difficulties with recruitment of schools impacted both on the sample size and the timing of the evaluation.

# 5. Future Directions

Future research may include research conducted on a larger scale on the use of the principles of Structure Teaching (visual schedules and work systems) with a larger sample size of teachers and across several schools or in different settings (e.g. secondary schools), addressing concerns with generalisability. Future research may also focus on monitoring the program fidelity to ensure that the program is being implemented as designed. As there is a lot of flexibility in the way that Structured Teaching approaches can be implemented, fidelity should focus on core elements. For example, work systems may take many different forms, but should inform the student about "what to do", "how long for", "when the task is finished" and "what happens next". As time was identified by teachers as a barrier, future studies should explore ways to reduce the time taken to implement Structured Teaching strategies in mainstream classrooms. For example, it is possible that the time demands could be reduced by embedding these strategies into lesson plans from the outset, or by using technology so that visual schedules and work systems could be edited more quickly and easily. Finally, future research could explore student responses including their motivation to use visual schedules and work systems in Australian primary and secondary schools.

# 6. Conclusions

The feedback on the professional development sessions showcasing eLearning Package was very positive with almost all respondents finding the sessions helpful in improving understanding of Structured Teaching. More positive responses were recorded for the professional development on work systems than on visual schedules. Verbal feedback received during and after the sessions revealed that many teachers already knew about and had been using visual schedules in the classroom, whereas they were less knowledgeable about work systems. The reasons for lower levels of participant knowledge about Universal Design for Learning were not clear and require further investigation, particularly given that an understanding of Universal Design for Learning is essential to the successful inclusion of students on the spectrum in mainstream classrooms. Further information on Universal Design for Learning was added to the Powtoon™ videos to enhance teacher knowledge in this area.

The teachers who participated were keen to learn about new teaching strategies, but the practical realities of demands on their time in the classroom and the time of year (nearing the end of the school year) impacted on their capacity to implement these strategies. All parts of the eLearning Package were well received, with preferences for a particular resource depending on the purpose (e.g., the downloadable templates were preferred for use in the classroom, whereas the PowToon™ videos were a preferred means of learning about Structured Teaching). Feedback gathered through the post-professional development surveys and the focus groups suggested that face-to-face professional development sessions were strongly favoured by most participants as they preferred engaging with a person to ask questions. They also valued the opportunity to physically touch and view the resources. The video-models developed by Studio G therefore demonstrate ways that these different types of resources can be used for work systems, and the quick reference guides provide photographs of a variety of resources being used. In accordance with teacher feedback, the PowerPoint™ presentations were reduced in length and complexity. Recommendations were given for Webinars on the eLearning resources with separate sessions for visual schedules and work systems.

Four main themes in regard to feedback on using the eLearning Package and implementation of visual schedules and work systems in the mainstream classroom emerged from the data, including issues with time, teacher engagement, issues with the social validity of strategies, and outcomes for teachers and students. The most commonly reported issue reported by all participants was time, as time directly impacted the teachers' engagement and/or success in implementing visual schedules and work systems, and their perceptions of the effectiveness of these strategies. There

AutismCRC

was also evidence to suggest that the success of visual schedules and work systems was dependent on the teacher's willingness to adapt their pedagogy and classroom environment. Some teachers did not appear to consider whole-of-class implementation, and instead focused on one student on the spectrum. A whole-of-class approach may have decreased or circumvented the stigmatisation that can result when students on the spectrum are made to "feel different". Positive feedback on the eLearning resources and their perceived usefulness for students on the spectrum and the class as a whole appeared to be directly linked to the teachers' engagement with the eLearning resources. More time to implement visual schedules and work systems in the classroom is required to fully evaluate the effectiveness of these teaching strategies.

Interestingly, while some teachers made adjustments to the resources, it must be noted that their implementation did not always completely align with the principles of Structured Teaching in practice, despite explicit teaching of the teaching strategy. For example, some teachers continued to position visual schedules in visually cluttered spaces. Other teachers confused the terminology when describing 'visual schedules' and 'work systems', (e.g., using the term "work schedules'). Nevertheless, overall the eLearning Package and professional development on autism and teaching strategies for the mainstream classroom were favourably received and reported to improve teacher understanding of Structured Teaching.

# 7. Key Recommendations

1.  The eLearning resources produced through this project are useful additions to the toolkit for mainstream school teachers in that they will assist them to develop autism-friendly classrooms.
2.  While online access to eLearning resources is valuable, the use of the resources in face-to-face professional development sessions continues to be favoured by many teachers.

# 8. References

American Psychiatric Association (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.

Ashburner, J., Ziviani, J., & Rodger, S. (2010). Surviving in the mainstream: Capacity of children with autism spectrum disorders to perform academically and regulate their emotions and behavior at school. *Research in Autism Spectrum Disorders, 4*(1), 18-27. doi:10.1016/j.rasd.2009.07.002

Berg, B. L., & Lune. H. (2014) *Qualitative Research Methods for Social Sciences* (8th ed.). United Kingdom: Pearson.

Cihak, D. F. (2011). Comparing pictorial and video modeling activity schedules during transitions for students with autism spectrum disorders. *Research in Autism Spectrum Disorders, 5*(1), 433-441. doi:10.1016/j.rasd.2010.06.006

Church, C., Alisanki, S., & Amanullah, S. (2000). The social, behavioral and academic experiences of children with Asperger Syndrome. *Focus on Autism and Other Developmental Disabilities, 15*(1) 12-10.

Dettmer, S., Simpson, R. L., Myles, B. S., & Gantz, J. B. (2000). The use of visual supports to facilitate transitions of students with autism. *Focus on Autism and Other Developmental Disabilities, 15*(3), 163-169. doi:10.1177/108835760001500307

Hill, E. L. (2004). Executive dysfunction in autism. *Trends in Cognitive Sciences, 8*(1), 26-32. doi:10.1016/j.tics.2003.11.003

Macdonald, L., Trembath, D., Ashburner, J., Costley, D., & Keen, D. (2018). The use of visual schedules and work systems to increase the on-task behaviour of students on the autism spectrum in mainstream classrooms. *Journal of Research in Special Educational Needs.* Advance online publication. doi: 10.1111/1471-3802.12409

Mesibov, G. B., & Shea, V. (2010). The TEACCH program in the era of evidence-based practice. *Journal of Autism and Developmental Disorders, 40*(5), 570-579.doi:10.1007/s10803-009-0901-6

Mesibov, G. B., Shea, V., & Schopler, E. (2004). *The TEACCH approach to autism spectrum disorders.* New York, NY: Kluwer Academic/Plenum Publishers.

Milley, A.M., & Machalicek, W. P. (2012). Decreasing students' reliance on adults: A strategic guide for teachers of students with autism spectrum disorders. *Intervention in School and Clinic, 48*(2), 67-75. doi:10.1177/1053451212449739

Patton, M. Q. (2015). *Qualitative research and evaluation methods* (4th ed.). Los Angeles, CA: Sage.

Schreibman, L., Whalen, C., & Stahmer, A. C. (2000). The use of video priming to reduce disruptive transition behavior in children with autism. *Journal of Positive Behaviour Interventions. 2*(1), 3-11 doi.org/10.1177/109830070000200102

Stoner, J. B., Angell, M. E., House, J. J., & Bock, S. J. (2007). Transitions: Perspectives from parents of young children with autism spectrum disorder (ASD). *Journal of Developmental and Physical Disabilities, 19*(1), 23-39. doi: 10.1007/s10882-007-9034-z

AutismCRC

Australian Government
**Department of Industry,
Innovation and Science**

**Business**
Cooperative Research
Centres Programme