Action Research for Inclusion and Special Educational Needs and Disability (ISEND): Case Study

Phonics for children who use alternative augmentative communication

Teaching phonics to children using the 'say it in your head' and 'distractor array' approaches (Primary, Mainstream School).

Contents

BACKGROUND INFORMATION

Type of setting	Mainstream
Age range of pupils	4-11
Roles of the Research Team	- SENCO - Class teacher - Learning Support Assistant

ACTION RESEARCH CYCLES

Appendix 1 shows the Action Research Cycles.

SUMMARY

Research focus	Assessing the reading of children with autism whose mode of communication is pictorial and gestural.
Research question	How can we best teach decoding skills to our children with autism whose mode of communication is pictorial and gestural?
Overview/Key information	- This study explores effective methods for teaching and assessing decoding skills for children with autism whose mode of communication is pictorial and gestural. - Conducted over two action research cycles, it began by addressing how to teach this group of learners to read. We started by using observations, interviews, and questionnaires to gather insights from teachers and Teaching Assistants.

	- Findings revealed uncertainty around evidence-based strategies, although staff were motivated to adapt the school's phonics programme for children whose mode of communication is pictorial and gestural. - In the second cycle, the research focused on decoding skills, incorporating external expertise and reviewing materials from special schools, leading to new techniques like diagnostic distractor arrays and the 'say it in your head'[1] method. - The study concluded that a phonics-based approach, with bespoke teaching and assessment strategies, is essential for these learners, while emphasising the need for a pre-phonics curriculum for those not yet ready for formal instruction.
Evidence-informed theory	A phonics-based approach is the best strategy for teaching reaching to children with autism whose mode of communication is pictorial and gestural. Use the approach in combination with the 'say it in your head' rather than out loud and 'distractor array' approaches.

RESEARCH TIMELINE

Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Action Research Cycle 1 Step 1: Establish the research focus	**Action Research Cycle 1** Step 2: Study Steps 3-5: Plan 1			Step 6: Do 1 Steps 7-8: Review 1 **Action Research Cycle 2** Step 9: Study 2 Steps 10-12: Plan 2 Step 13: Do 2 Step 14-15: Review 2				Share and disseminate the research (anonymised) with other interested parties.		

ACTION RESEARCH CYCLE 1

RESEARCH FOCUS: Step 1

Initial research interest aim/question (Step 1)	How can we best teach reaching to our children whose mode of communication is pictorial and gestural?

KEY LITERATURE SHAPING THE RESEARCH (STUDY 1): Step 2

Reference	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. https://doi.org/10.1016/j.rasd.2009.07.002
Key point(s) of note	Children with autism are significantly more likely than neuro-typical peers to under-perform in a mainstream school.

[1] Saxon Hill Academy. (2024). *Non-verbal Reading: A Parents / Carers Guide*. https://files.schudio.com/saxon-hill-academy/files/documents/curriculum/Parent-Carer_Guide_for_Non-Verbal_Reading_-_November_2020.pdf

Reference	Nation, K., Clarke, P., Wright, B., & Williams, C. (2006). Patterns of Reading Ability in Children with Autism Spectrum Disorder. *Journal of Autism and Developmental Disorders*, *36*(7), 911–919. https://doi.org/10.1007/s10803-006-0130-1
Key point(s) of note	Children with autism show considerable variability in reading ability. Sample: 41 children with autism.

Reference	Nally, A., Healy, O., Holloway, J., & Lydon, H. (2018). An analysis of reading abilities in children with autism spectrum disorders. *Research in Autism Spectrum Disorders*, *47*, 14–25. https://doi.org/10.1016/j.rasd.2017.12.002
Key point(s) of note	Children with autism typically have impaired reading skills, with many performing in the lowest range on standardised tests (standard score 55) in particular for comprehension (88%) and phonemic awareness (62%). This includes children whose word reading and reading rate are significantly higher, indicating that achieving effective reading skills is challenging for children with autism. Reading abilities are highly correlated with language skills. Good word reading ability but poor reading comprehension is a common profile for students with autism. 'Hyperlexic profile' – ability to recognise written words in advance of age and cognitive functioning – affects 5-10%.

Reference	Åsberg Johnels, J., Carlsson, E., Norbury, C., Gillberg, C., & Miniscalco, C. (2019). Current profiles and early predictors of reading skills in school-age children with autism spectrum disorders: A longitudinal, retrospective population study. *Autism*, *23*(6), 1449-1459. https://doi.org/10.1177/1362361318811153
Key point(s) of note	This study explores current reading profiles and concurrent and early predictors of reading in children with autism spectrum disorder. Before the age of 3 years, the study cohort underwent a neurodevelopmental assessment following identification in a population-based autism screening. At age 8 years, reading, language and cognition were assessed.

Reference	Mucchetti, C.A. (2013). Adapted shared reading at school for minimally verbal students with autism. *Autism*. *17(*3), 358-372. https://doi.org/10.1177/1362361312470495
Key point(s) of note	Showed increased engagement and story comprehension through adapted shared reading with an adult in four children aged 5-6 with autism. Adaptations included sensory/tactile objects, visual supports, integration of alternative augmentative communication (AAC) devices.

Reference	Accardo, A. L., Finnegan, E. G., Gulkus, S. P., & Papay, C. K. (2017). Teaching reading comprehension to learners with autism spectrum disorder: predictors of teacher self-efficacy and outcome expectancy. *Psychology in the* Schools. *4*(3), 309–323. https://doi.org/10.1002/pits.21994
Key point(s) of note	Analysis of effective practices in teaching reading comprehension to learners with autism. Identified two evidence-based practices (graphic organisers and systematic prompting) and eight effective practices: anaphoric cueing; compare and contract diagrams; cooperative learning; direct instruction; question generation; read-alouds; reciprocal questioning; story structure maps. However, use of most techniques by teachers of children with autism in specialist settings was limited.

Reference	Clendon, S., Paynter, J., Walker, S., Bowen, R., & Westerveld, M. F. (2021). Emergent Literacy Assessment in Children with Autism Spectrum Disorder Who Have Limited Verbal Communication Skills: A Tutorial. *Language, Speech & Hearing Services in Schools*, *52*(1), 165–180. https://doi.org/10.1044/2020_LSHSS-20-00030
Key point(s) of note	Considers the importance of assessment approaches suitable for children with autism and limited verbal communication. Use of distractor words in task that requires matching speech to print but adult provides the speech. Importance of understanding child's interests and motivation. Study of one child.

Reference	Queiroz, L.R., Guevara, V.S., Souza, C.A. & Flores, E.P. (2020). Dialogic reading: Effects on independent verbal responses, verbal and non-verbal initiations, and engagement of children with autism spectrum disorder. *International journal of psychology and psychological therapy*, *20*(1), 47-59. https://doi.org/10.31234/osf.io/pkdzh
Key point(s) of note	Emphasises the importance of dialogic (shared) reading with children with autism.

Reference	Silveira-Zaldivar, T., & Curtis, H. (2019). "I'm Not Trained for This!" And Other Barriers to Evidence-Based Social Skills Interventions for Elementary Students with High Functioning Autism in Inclusion. *International Electronic Journal of Elementary Education*, *12*(1), 53–66. https://doi.org/10.26822/iejee.2019155337
Key point(s) of note	Identifies six barriers to adoption of evidence-based practices in teaching children with autism in mainstream settings (focus on social skills not reading): training, time, support, priorities, materials, staff mind-set. Identifies three factors necessary for evidence-based practices to be implemented: support, preparation, motivation.

Reference	Gough, P.B. & Tunmer, W.E.,1986. Decoding, reading, and reading disability. *Remedial and special education*, *7*(1), .6-10. https://doi.org/10.1177/0741932586007001
Key point(s) of note	Describes the 'Simple view of reading'[2]: reading is a function of word recognition and language comprehension. To become good readers, children's skills in both areas must be developed.

Reference	Scarborough, H. S. (2001). Connecting early language and literacy to later reading (dis)abilities: Evidence, theory, and practice. In S. Neuman & D. Dickinson (Eds.), *Handbook for research in early literacy.* New York: Guilford Press.
Key point(s) of note	Scarborough's 'Reading Rope[3]' – breaks down 'language comprehension' and 'word recognition' into constituent skills. Note: children with complex needs/autism may lack experiences/learning that are important to building language comprehension and need explicit development in this area as well as in word recognition skills. Also see the Lexia Blog Post (2024) 'What is Scarborough's Reading Rope?'[4]

PLAN 1: Step 3

As part of the process of planning Action Research Cycle 1 and having completed the 'study' phase, the research question can evolve and become further refined.

Revised research question	At this stage no revisions to the original research question were made.

PLAN 1 and DO 1: Steps 4 and 6

Methods of data collection

Questionnaire, observations, interviews.

Description of research sample, timing and location

A number of methods were used to discover how we are currently teaching our children whose mode of communication is pictorial and gestural to read:

- A questionnaire was completed by teachers and teaching assistants working directly with this group of children to find out what teaching methods are currently being used and how

[2] Farell, L., Hunter, M., Davidson, M., & Osenga, T. (n.d.). *The Simple View of Reading*. Reading Rockets. https://www.readingrockets.org/topics/about-reading/articles/simple-view-reading

[33] AIM Institute for Learning and Research. (2022). *The Animated Reading Rope.* https://institute.aimpa.org/resources/readingrope

[4] Lexia. (2024, November 18). *What is Scarborough's Reading Rope?* https://www.lexialearning.com/blog/what-is-scarboroughs-reading-rope

confident staff felt in delivering them. This was followed-up with conversations with key staff. Following these conversations, it was agreed to focus on two children for further investigation.

- Having obtained parental consent, a series of observations were conducted of reading activities with two children whose mode of communication is pictorial and gestural. Some of these observations were done in person and some were videoed and viewed later.
- Interviews were conducted with the teaching assistants who work most closely with the children to explore current practices, opportunities and challenges in more depth.

PLAN 2: Step 5

Ethical consent was sought from the parents of both children to publish this data anonymously.

REVIEW 1: Step 7-8

Data Analysis: process
A quantitative and qualitative analysis of responses to the questionnaire was undertaken to gauge how confident staff were with the delivery and efficacy of current approaches to teaching our children with autism whose mode of communication is pictorial and gestural. In-person observations and video observations were conducted of teaching and learning sessions. These were then critically analysed to look at engagement, progress, scaffolding, opportunities for independence, integration of communication supports (Alternative Augmentative Communication core boards[5], etc.), strengths, and opportunities for further development. A semi-structured methodology was used to interview two teaching assistants about their experiences of teaching phonics to children with autism whose mode of communication is pictorial and gestural - five key questions were used to form the basis of an open-ended discussion.
Summary of Findings
Research Question: How can we best teach our children whose mode of communication is pictorial and gestural to read? *Questionnaire* - Staff did not feel that they had an understanding of evidence-based strategies to teach children whose mode of communication is pictorial and gestural to read and were not confident about their ability to do so. - Although staff were happy overall with the systematic synthetic phonics programme the school was using, they struggled to see how it could be applied to our children whose mode of communication is pictorial and gestural. - Staff were ambitious for children with autism whose mode of communication is pictorial and gestural. They were motivated to make necessary adaptations but were unsure how best to do this and were keen for further guidance. *Observations and Interviews* - There was a wide variance in terms of developmental level, readiness to read, motivation and current reading ability among the five children in the school whose mode of communication is pictorial and gestural. It was therefore decided to focus on two children, both in Year 2, who showed the greatest readiness to engage in adult-led activities. One of these children has been

[5] Brydon, S., & Pretorius, E. (2021, July 12). *Spotlight on Core Boards.* Altogether Autism: New Zealand. https://www.altogetherautism.org.nz/spotlight-on-core-boards/

showing signs of hyper-lexia (the ability to recognise written words in advance of age and cognitive functioning) for approximately 12 months.
- An adapted version of the school's systematic synthetic phonics (SSP) programme was being used to teach these children phoneme-grapheme correspondence and sight recognition of common exception words. One child was motivated to engage in adult-directed activities and could show his understanding by verbalising most individual letter sounds and Level 2 'tricky words'; the other child required a more bespoke motivational approach but was working on Level 5 sounds and had an extensive sight word vocabulary.
- Staff were using a range of different techniques to teach and assess the children on a 'trial and error' basis. Staff were unsure how to assess the children's knowledge or how best to progress their understanding.

Analysis and next steps leading into Action Research Cycle 2

- The evidence showed that the school's SSP was being used to teach pre-verbal children. Some success had been achieved in children's learning of graphemes and whole words.
- Staff remained unsure of how to assess the children's knowledge, or how to make further progress. For one child, staff struggled to know how to develop his ability to recognise graphemes by teaching him to blend sounds together into words, or to know if he was able to do this given the absence of speech. For the other child, knowing that he has an extensive sight vocabulary led to a lack of clarity as to whether continuing with a phonics-based approach or using a 'whole word' approach was best for this child.

Next Step(s): Action Research Cycle 2

As an extensive research review had not provided clear direction on evidence-based practices to teach reading to children with autism whose mode of communication is pictorial and gestural, the project lead therefore looked to see if high-quality advice on experience-based practices could be secured from current practitioners. She arranged to attend a training course on teaching children with complex SEND to read, reached out to two local special schools for advice, and arranged for the Autism Outreach service to come into school to do a 'learning walk' focused on reading development for children with autism.

Considering the research in relation to the Simple View of Reading and Scarborough's Reading Rope, it became clear that reading difficulties among children with autism are often the result of both word recognition and language comprehension problems. Children with autism often struggle with language comprehension because of challenges with understanding or prior experience. Supporting children in all the constituent skills that underlie language comprehension is a much bigger project and it was therefore decided to revise the research question to focus specifically on decoding skills.

ACTION RESEARCH CYCLE 2

KEY LITERATURE SHAPING THE RESEARCH (STUDY 2): Step 9

Reference	Heller, K.W., Fredrick, L.D. & Diggs, C.A. (1999). Teaching reading to students with severe speech and physical impairments using the nonverbal reading approach. *Physical Disabilities: Education and Related Services*, *18*(1), 3-34. https://doi.org/10.1023/A:1013559612238
Key point(s) of note	Demonstrated the effectiveness of diagnostic distractor arrays and the importance of their use in comparison to indiscriminate arrays.

Reference	Wolff Heller K., Fredrick, L. D., Tumlin, J., & Brineman, D. G. (2002). Teaching Decoding for Generalization Using the Nonverbal Reading Approach. *Journal of Developmental and Physical Disabilities*, *14*(1), 19–35. https://doi.org/10.1023/A:1013559612238
Key point(s) of note	Demonstrates effectiveness of the nonverbal reading approach (NRA) with three children without autism including decoding skills generalised to unknown words with little or no additional instruction.

Reference	Leytham, P.A., Pierce, T., Baker, J., Miller, S. & Tandy, D. (2015). Evaluation of the nonverbal reading approach for two 12 to 13-year-old students with autism. *Research in Autism Spectrum Disorders*, 9)68-76. https://doi.org/10.1016/j.rasd.2014.09.014
Key point(s) of note	Explained the NRA and indicated its effectiveness for improving word recognition in children with autism, but with a small sample size.

Reference	Bigge, J., Best, S., & Heller, K.W. (2001). *Teaching individuals with physical, health, and 5 multiple disabilities*, (4th ed). New York: Prentice Hall.
Key point(s) of note	Detailed explanation of how to deliver and assess the NRA.

Reference	DiStefano, C. (n.d.). *Teaching children with nonverbal autism to read.* Autism Speaks. https://www.autismspeaks.org/expert-opinion/five-tips-teaching-nonverbal-children-read
Key point(s) of note	Advice for parents on encouraging reading in non-verbal children with autism.

Reference	Saxon Hill Academy. (2024). *Leaders Curriculum: Reading and Phonics.* https://files.schudio.com/saxon-hill-academy/files/documents/curriculum/Leaders_Curriculum_Reading_and_Phonics.pdf
Key point(s) of note	Outline of approach to reading at Saxon Hill special school including verbal and non-verbal tracks; pre-phonics programme; and specific teaching, learning and assessment techniques.

PLAN 2: Step 10

Revised research question	How can we best teach decoding skills to our children with autism whose mode of communication is pictorial and gestural?

PLAN 2 and DO 2: Steps 11 and 13

Methods of data collection

- Attendance at a training programme on teaching children with complex SEND to read.
- Review of materials on reading and phonics teaching from Saxon Hill Academy (a local special school).
- Observation of teaching sessions introducing new teaching and assessment strategies.
- Conducted learning walks with the team from Autism Outreach and with our local special school outreach teacher.

i.e., interview, observation, data analysis, observation, evaluation, reflective journal, etc.

Description of research sample, timing and location

The research project continued to focus on two boys in Year 2. The training course took place in February 2024. The materials review took place in April 2024. The learning walks took place in June 2024.

PLAN 2: Step 12

Ethical consent was sought from each participant to publish this data anonymously.

REVIEW 2: Steps 14-15

Data Analysis: process

Content learned through the training session and through the materials review was shared with staff in two training sessions and they were invited to think of ways that the key messages could be applied to teaching the children they work with.

Notes from observations and learning walks were analysed to look for strengths and further opportunities within teaching sessions and were discussed with team members.

Summary of Findings

Action Research Cycle 2 Research Question

How can we best teach decoding skills to our children with autism whose mode of communication is pictorial and gestural?

Key learning from the training session on teaching children with complex needs to read included:

- A phonics-based approach is indicated even for children who appear to be naturally using a 'whole word' approach as phonics will allow their learning to be generalised.
- Following the school's SSP programme but with an extended timetable, much greater repetition and different delivery mechanisms were recommended.
- Strategies of 'continuous blending' by the adult and teaching children to use their "thinking" were recommended to support children's processing and memory.
- Bespoke assessment strategies that enable teachers to understand what the child knows and can do in the absence of speech are a crucial component. Several approaches to motivating and accessible assessment strategies were recommended.

Key learning of the review of materials from Saxon Hill Academy included:

- An ambitious statement of intent for children with complex needs to become readers.
- Description of six areas of pre-requisite skill that need to be developed through a pre-phonics curriculum for some learners.

- A pathway through the SSP programme for children with autism whose mode of communication is pictorial and gestural.
- Use of diagnostic distractor arrays[6] to assess knowledge and comprehension of children whose mode of communication is pictorial and gestural.

Key learning from lesson observations and learning walks included:
- Staff are applying teaching and assessment techniques.
- A bespoke approach based on key relationships and harnessing the child's interests is essential and is in place.
- Staff are more confident that we are on the right path in our approach to teaching children whose mode of communication is pictorial and gestural.
- Learning walks.

Analysis and next steps leading into Action Research Cycle 3

Cycle 2 has been critical in making progress through accessing experience-based expertise from other practitioners. We are now confident that:

a. there is not yet a body of established evidence-based practices that we ought to be drawing on,
   and
b. we can feel confident that by following experience-based recommendations we are offering the best provision we can to our children whose mode of communication is pictorial and gestural.

We are now confident that the answer to the question, 'How can we best teach decoding skills to our children with autism whose mode of communication is pictorial and gestural?' is through a systematic phonics programme, and we understand that this can and should look different to the programme accessed by neuro-typical peers in terms of duration and mechanisms of delivery and assessment.
We have introduced new teaching techniques (in particular the 'say it in your head[7]' technique) and new assessment techniques including motivational tasks and diagnostic distractor arrays and are using these to inform next steps for teaching. The next step in this area is to embed these practices and assess their impact on children's progress.

During the process of this project, we realised the need to narrow the focus to teaching and learning decoding strategies. There is a great deal of work that also needs to be done to support language comprehension skills in children with autism especially those with limited spoken language; this will form the focus of future work.

We have understood the need for explicit teaching of pre-phonics skills to develop readiness in children who are not yet ready to engage in formal learning. Developing a specific programme of learning for these children will also form a focus for further work.

[6] Eilts Family. (n.d.). *Non-verbal Reading Approach.* https://www.eiltsfamily.org/udl_at/resources/Reading/Nonverbal_reading.pdf
[7] Murphy, C. (2021, July, 7). *Top Tips and Resources for Teaching Children with SCLN to Read.* Twinkl. https://www.twinkl.co.uk/blog/top-tips-and-resources-for-teaching-children-with-scln-to-read

CONCLUSION

Research aim/question
How can we best teach decoding skills to our children with autism whose mode of communication is pictorial and gestural?
Conclusion(s) Through our research project we have concluded that: - A phonics-based approach is the best strategy for teaching children with autism whose mode of communication is pictorial and gestural, with duration, delivery and assessment mechanisms varied as much as is necessary for each individual learner. - In the absence of definitive evidence-based practices, experience-based advice is the best available expertise we can follow for our learners. - We are trialling specific teaching and learning strategies for children whose mode of communication is pictorial and gestural (the 'say it in your head' technique) and will monitor impact. - We are using a range of different techniques to encourage engagement, practise and assessment. - We have begun to use diagnostic distractor arrays as a specific, evidence-based assessment technique.
Next Steps
Our next steps are: - To continue to embed new teaching, learning and assessment practices and monitor their effectiveness through observations, learning walks, and progress data. - To use the model of Scarborough's Reading Rope to consider the needs of children with autism whose mode of communication is pictorial and gestural. - To use the framework provided by Saxon Hill to develop a pre-phonics programme to develop readiness for engagement with phonics in those children who are not yet ready for this.

ACTION RESEARCH CYCLES

Action Research Cycle 1	**Establish the research focus**	**Step 1:** Identify the ISEND area for development which requires research.
	Study 1	**Step 2:** Review the research literature.
	Plan 1	**First Plan**
		Step 3: Start the process of refining the research.
		Step 4: Decide what kind of direction you are going to take (direct or enquiry).
		Step 5: Consider research ethics (engage with the ethics checklist).
	Do 1	**Step 6:** Implement the first plan (either direct action or enquiry as action).
	Review 1	**Step 7:** Review and Reflect.
		Step 8: Analyse the meaning of the data gathered.
Action Research Cycle 2	**Study 2**	**Step 9:** Review further literature if required.
	Plan 2	**Second Plan**
		Step 10: Based on the 'reflect' phase, refine the research (this may involve revising or developing the research questions) and plan the next actions.
		Step 11: Decide what kind of action you are going to take (direct or enquiry).
		Step 12: Seek any further ethical permissions if needed (engage with ethics checklist).
	Do 2	**Step 13:** Implement the second plan – (either with ethics checklist).
	Review 2	**Step 14:** Review and reflect.
		Step 15: Analyse the meaning of the data gathered.