Assistive Technology Resources for Children and Adults with Disabilities

Closing The Gap

Solutions

December, 2025 / January, 2026
Volume 44 - Number 5

www.closingthegap.com

STAFF

Megan Turek ..... PRESIDENT

Marc Hagen ..... VICE PRESIDENT MANAGING EDITOR

Becky Hagen..... MEMBERSHIP MANAGER REGISTRATION MANAGER

Callie Kriechbaum..... SALES MANAGER

INDIVIDUAL SOLUTIONS MEMBERSHIP
Membership Rates
1-yr. $449; 2-yr. $748; Parent $275

GROUP SOLUTIONS MEMBERSHIP
Group options available.

SUPPLEMENTAL COLLEGE CURRICULUM – ELECTRONIC TEXTBOOK
Instructors receive a complimentary one-year membership.

Student Membership
1-yr. $125 Standard

Visit www.closingthegap.com/membership for complete details and pricing.

PUBLICATION INFORMATION
Closing The Gap (ISSN: 0886-1935) is published bi monthly in February, April, June, August, October and December.

CONTACT INFORMATION
Please address all correspondence to Closing The Gap, P.O. Box 68, Henderson, MN 56044. Telephone 507-248-3294; Fax 507-248-3810. Email <info@closingthegap.com>; Website <www.closingthegap.com>.

EDITOR'S NOTE
The information provided by Closing The Gap, Inc. in no way serves as an endorsement or guarantee by Closing The Gap, Inc.

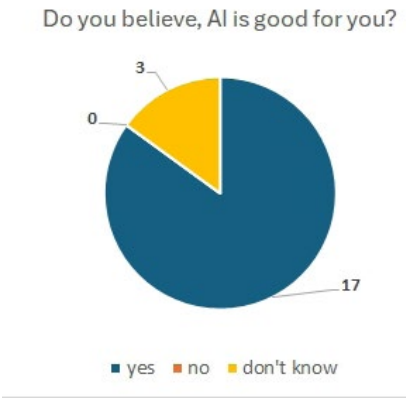
@ATClosingTheGap

www.facebook.com/ATClosingTheGap

www.instagram.com/atclosingthegap

contents December, 2025 / January, 2026

volume 44 | number 5



AAC and AI - First Insights Into The Use Of AI By AAC Users

Summary:

Triggered by the growing public awareness of Artificial Intelligence (AI), questions arise about its accessibility for people with disabilities—especially users of Augmentative and Alternative Communication (AAC). This study explores usage possibilities, attitudes, and potential barriers. By analyzing definitions, contextual factors, and survey data, it highlights application potential and the impact of the digital divide. The findings offer insights into how AAC users could possibly profit from AI.

INTRODUCTION

With the perception and increasing spread of AI by the general public since the end of 2022, the question arises as to what extent people with disabilities also use AI? The question can be narrowed down even further to the group of people who use AAC. Can similar fields of application of AI be identified or are AAC users excluded from the use of artificial intelligence in the sense of the "digital divide"?

In order to better understand the usage behavior of people who are dependent on AI, definitions of important terms, corresponding contexts and surveys on the use of artificial intelligence by people with disabilities are presented. This is followed by a description of the attitude concept, before the structure of the questionnaire and the results of the survey are presented. Finally, the results are discussed.

AAC AND TARGET GROUP

AAC is a branch of special education. According to Heidtmann (2010, p. 345) there are estimated to be around 300,000 AAC users in Germany. In addition to the well-known target group description by von Tetzchner and Martinsen (2000) , there is also the target group description by Weid-Goldschmidt (2015). It classifies them according to milestones in communication development and resources, i.e. the motor, linguistic and cognitive abilities of the people using AAC. The classification is relevant to the survey in that it was primarily used to survey AAC users in target group IV.

IGOR KRSTOSKI, Seminar School Counselor and Head of the Department of Physical and Motor Development at the Seminar for Training and Further Education of Teachers (Seminar for Special Education) in Reutlingen, active in teacher training at the ZSL, speaker at the GesUK e.V., editor of the german journal “UK”.
i.krstoski@gesellschaft-uk.org

ANDREAS GRANDIČ, Special Education teacher, since 1989 at the Sonnenhofschule in Schwäbisch Hall, mainly in the field of AAC, speaker at the Society for Augmentative and Alternative Communication (GesUK e.V.)
a.grandic@gesellschaft-uk.org

BACK TO CONTENTS

USES OF DIGITAL MEDIA - INEQUALITIES (DIGITAL DIVIDE)

With the introduction of the chatbot ChatGPT in December 2022, the topic of AI has rapidly gained public attention. As with all innovations in the technical field, the question arises as to whether these new and further developments can be of benefit to people with disabilities or exclude them even further.
However, there is also a risk that this group of people will be excluded from using these technologies. The term "digital divide" describes inequalities in access to and use of digital technologies, such as the internet. This can particularly affect marginalized population groups, such as people with disabilities (Robinson et al., 2020) . The digital divide distinguishes between three dimensions:

- The first-level digital divide refers to inequalities in access to devices (computers and mobile devices) and the internet;
- The second-level digital divide represents differences in skills and ways of using digital technologies;
- Third-level digital divide are understood as advantages or consequences, i.e. as effective and reflected use of ICT in various areas of life such as education, work or social participation (Ragnedda, 2017) .

For example, studies have shown that people with different impairments are affected by various dimensions of digital divide (Bosse & Hasebrink, 2016; Sponholz & Boenisch, 2021). This means that people with disabilities are denied access to and use of digital media as well as the benefits that arise from using digital media. In this respect, the question arises as to whether people with disabilities use AI at all and how they use it. The following are examples of the results of two articles.

IMPORTANCE OF ARTIFICIAL INTELLIGENCE (AI) FOR PEOPLE WITH DISABILITIES

In a recent meta-study, AI areas of application for people with impairments are discussed. These include, e.g., changes in the areas of social interaction, motivation or phoneme-grapheme correspondence (Rice & Dunn, 2023) . Schulz and Schmid-Meier cite the potential of AI-supported AT:

- AI-supported voice assistants, using speech-to-text engines, in which AI leads to an improvement in speech recognition and produces fewer errors
- AI-supported visual assistance, i.e. the visual offers are enriched by audible information, whereby the voice output can support people with visual impairments
- Reading and writing assistance, where a wide range of support for the reading and writing process can be expected
- Language assistance, which refers to the translation of materials into different languages
- Hearing assistance, which enables hearing-impaired people to access information and content by translating spoken language into text or sign language (Schulz & Schmid-Meier, 2024, p. 38)

Sennot et al. discuss the potential of AI in the context of AAC in an article (Sennott, Akagi, Lee & Rhodes, 2019) . The following areas are mentioned in which improvements to existing technologies or new developments can be expected through or with the help of AI: When choosing a communication system, AI could take relevant factors into account in a supportive manner and facilitate the selection, e.g. with regard to vocabulary organization and representation, in order to reduce the burden on working memory and motor skills/control.

It is also conceivable that AI could be used to help the environment of people who use AAC by providing additional information about people who use AAC and tailored support measures.

Furthermore, it can be assumed that AI will make great progress in the field of speech recognition. Corresponding communication systems can, for example, be automatically adapted using certain contextual elements such as location, time, previous language use, factors relating to the communication partner, conversation content and internet-based data.

Personalized voice output offers further potential for AAC users. Thanks to machine learning, relatively little effort is required for personalized speech output/speech synthesis.
In connection with machine learning, new control options can also be developed to speed up the interaction between the user and the electronic communication aid and to avoid incorrect input.

As part of the Internet of Things, AAC users can access digital voice assistants and carry out interactions on the internet using electronic communication aids, e.g. control the lighting in their living environment or select music etc. (Krstoski, 2020) . In addition to the aforementioned digital voice assistants, Sennot et al. mention automated image recognition using artificial intelligence. Machine learning can be used to automatically recognize objects in photos/images.

In the application of AI in the context of AAC, so-called scene images are referred to as the ideal type for automatic image recognition (Sennott et al., 2019) . AI can help to create thematic communication pages from a photo in a time-efficient manner. A study on the QuickPic AAC app is available for this purpose (Yu et al., 2024) . The Click AAC app belongs to this same, new type of app from the field of AAC and AI. It can be assumed that there will be some new developments in the use of AI in AAC and that the trend towards just-in-time communication solutions will continue (Schlosser et al., 2016).

There are therefore many areas of AAC in which AI has already been successfully implemented. From this, it can be concluded that the topic of AI can also be important for a small group of people. Current estimates suggest that around 0.8 to 1.2 % of the population with a need for AI can be found at (Morin et al., 2018, p. 108). The question arises, how do AAC users perceive

BACK TO CONTENTS

the topic of AI? To answer this, the next chapter will look at the socio-psychological concept of attitudes.

THE RECRUITMENT CONCEPT

In view of the media coverage of artificial intelligence, which ranges from fascinating results to the manipulation of public opinion by means of artificially created images and films, fake news, etc., the aim is to determine how AAC users experience the topic of AI. In order to gain an initial impression of this, an attempt is made to determine the attitudes of this group of people towards AI. There is no standard definition of attitudes. We refer to Six (2001), defining attitude as a psychological tendency of approval or disapproval of a certain object. This means that there is an attitude object and an evaluation of it. Objects of attitude can be concrete or abstract, or inanimate objects, people or social groups (Bohner, 2002) . This means that AI can be understood as an abstract attitude object. The so-called three-component model is used to gain an initial differentiated insight into evaluations of AI. The three components/dimensions of an attitude and their relationships are explained below.

- Cognitive attitude component: This consists of ideas, opinions, knowledge and beliefs about an attitude object.
- Affective attitude component: This comprises emotions and feelings towards an attitude object.
- Conative attitude component: This refers to actions that are directed towards an attitude object and behavioral intentions (Barry, 2014, p. 34f.) .

Furthermore, it is assumed that the three components mentioned are consistent with each other. This means that these components are mutually dependent. If a person has a corresponding opinion towards an object, they will evaluate this attitude object accordingly and react accordingly in terms of behavior (Bohner, 2002) .

METHOD

In order to gain an initial impression of whether the participants use AI at all and what their attitude towards it is, a quantitative survey in an efficient form seemed necessary. The questionnaire format was a fillable PDF file and a Word document. The PDF format was also chosen because it is a common format and there are usually no formatting problems. The PDF also includes selection fields. This has the advantage that the motor skills required to complete the questionnaire were kept to a minimum.

In addition to the questionnaire, the document also contains an explaining letter, in which information was provided on what AI is, the purpose of the survey, what happens to the results and how the questionnaire is structured in accordance with plain language criteria. Participation was also explained and information on data protection was provided. In order to avoid unnecessary barriers, the Arial font was chosen, as it can be assumed that this is a common font already installed on many systems.
The questionnaire was sent to two selected AAC users at the beginning of December, asking them to read it critically for comprehensibility and also to provide feedback in other ways. The suggestions for improvement were then added to the questionnaire.

PARTICIPANTS

As already explained, the target group consists of people who use AAC in the form of speech generating devices. The project and the questionnaire were presented at an online meeting on 12.12.2024 of the AAC consultants of the Society for Augmentative and Alternative Communication. One participant gave feedback that there should be a field for a free answer "If nothing fits" in addition to the closed answer options for certain questions. This suggestion was added to the final version of the questionnaire. On 16.12.2024, the questionnaire was sent by email to the participants of this meeting. The response rate was 50%. A total of 21 questionnaires were included in the evaluation.

QUESTIONNAIRE

The questionnaire is divided into three parts. The first part collects demographic data. In addition to age, gender and employment status, questions were also asked about the type of speech generating device. There are articles in which a lack of interconnectivity/interoperability was cited as a barrier to participation for AAC users (Mc Naughton & Light 2013, p. 109; Wendt 2023, p. 40). As artificial intelligence applications based on large language models are web-based and enable interaction with users via browsers, the type of speech generating device was asked.

Corresponding questions were formulated according to the attitude components cognition, emotion and conation. The second part of the questionnaire consisted of 12 questions. The answer options are not standard scales. The answer options were adapted so that they were easier to select. This was intended to simplify the answering process. Of the twelve questions, nine had a single answer option. For three questions, several answer options could be selected. Question twelve deals with the topic of prompting. Newcomers to prompting face particular challenges. In a study by Zamfirescu-Perreira et al. (2024), the following specific problems were identified: Design, selection, information, understanding and use barriers. If the questionnaire participants filled out the field, their free answers could be assigned to the corresponding categories.

The third part of the questionnaire comprised a total of nine questions, which can be assigned to the three dimensions of the digital divide. This means that questions were generated on the equipment, usage methods and benefits resulting from usage. In this part, too, standardized answer options were dispensed with due to a clear answer and adapted answers were inserted instead.

RESULTS

The results were analyzed using Excel. Two respondents replied by email that AI did not play a role for them. A total of 21 completed questionnaires were included in the analysis. It should be noted that all responses were counted in the results. This means that some questions were not answered by all participants. The results are presented using the three sections of the questionnaire. First, the demographic information is presented in the general section, followed by the results on attitudes towards AI, in terms of the cognitive, affective and conative components. Finally, the results on equipment etc. are described.

Demographic data

- 12 of 21 participants are aged 29 and under
- 13 male and 8 female participants
- 11 people are in employment, 5 in training and 4 fall under other
- 12 people use AI without assistance, 8 people with the support of an assistant
- 10 people use Tobii, 8 devices from Prentke Romich Germany

Cognitive component (knowledge, opinions, ideas)

When asked whether AI had ever been used, 85.7% answered yes and 14.3% no. This means that the majority of respondents have already used AI. This is an unexpectedly high number.

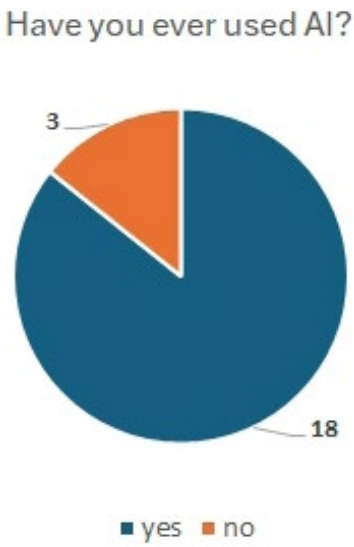


Fig. 1 - AI usage.

With regard to the applications in which AI can help, the respondents answered very differently: writing texts, creating images and music and other things.

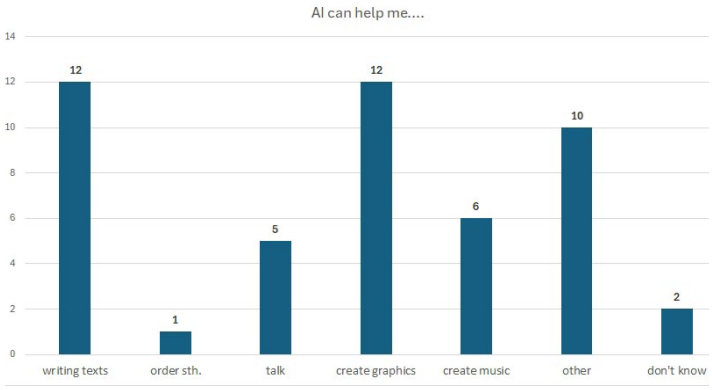


Fig. 2 - Where AI can help

Possible uses of AI: 85.7% state that they could use AI in their leisure time. However, 61.9% also state that it could be used in work and education. In communication, 42.9% cite a possible application.

Affective component (feelings)

When asked how they feel when they think about AI, 50% answer "I think it's great" and 38.9% say they are curious. Uncertainty and fear were mentioned by 14.3%.

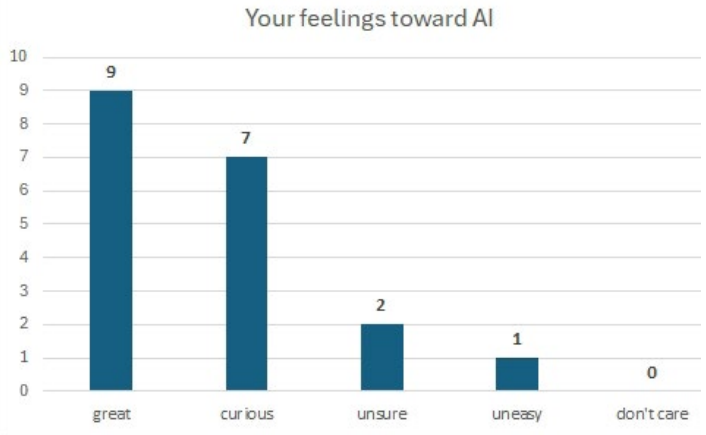


Fig. 3 - How do I feel when I think about AI

The next question, whether AI causes concern, was answered by 57.1% with no. But there are also 4 people who feel unknowingly lied to by an AI, or 16.7% who are worried that an AI knows everything about them. 9.5% of respondents state that they could be replaced by AI.

BACK TO CONTENTS

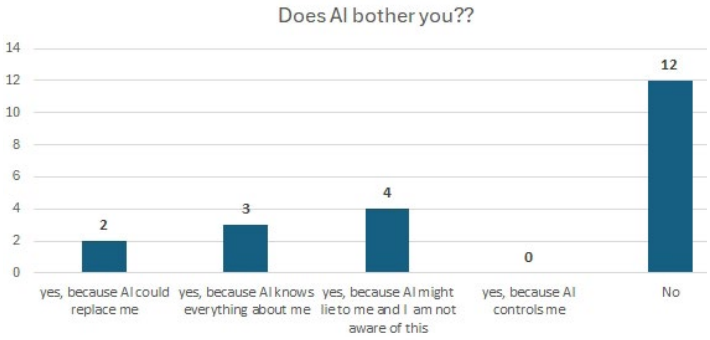


Fig. 4 - Does AI worry you?

When asked "What I like about AI...", 33% chose "being able to live independently", with a further 33% choosing "being able to do things that I couldn't do before". 33% agree with the answer "being able to learn completely new things". A certain optimism can be seen here.

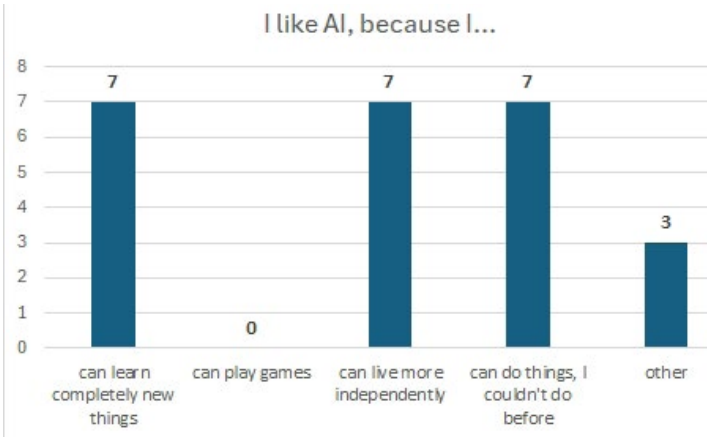


Fig. 5 - The question of what I like about AI

"What I find difficult about AI is..." 50% of the votes fall on "how AIs differ". This means that AAC users want to know more about AI. 27.8% of respondents answered "that everything is developing so quickly" and 22.2% opted for the answer "that I don't know how it works".

The question "Do you think AI is good for you?" was very well received. - 85% answered yes, 15% said "don't know".

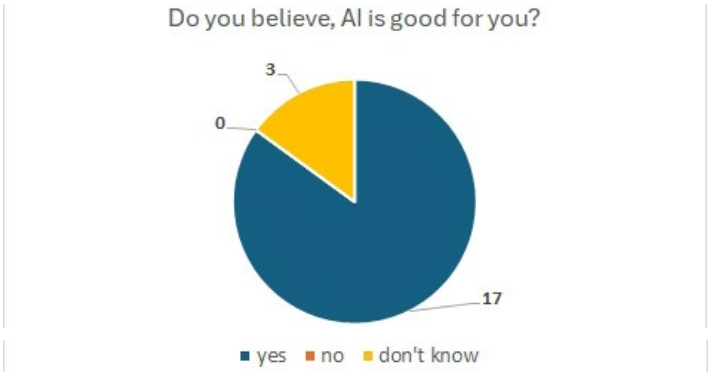


Fig. 6 - Assessment of whether AI is good for me

Conative component (behavioral intention)

When asked "do you want to know more about AI", 100% responded "yes, very much so". This means that the participants are willing to learn more about the topic.

"Would you like to try out AI" was agreed to by 14 out of 21 people. Based on the free response field, it is clear that 5 other people already use AI. One person answered: "Yes, I would like to try it out when I have learned more about it" (P 13).

When it comes to the AI applications that AAC users already use, there are various responses: 66% have used chatbots. Voice assistants are also mentioned relatively frequently (47.6%). Image creation (33%), translation (33%) and music creation (14.3%) were also mentioned.

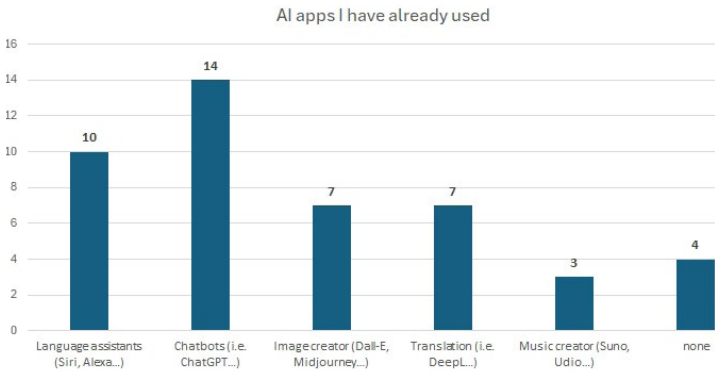


Fig. 7 - Different types of use

The last question from the conative component section is "Learning AI with ...". "Yes, with other AAC learners" (47.6%), "with the help of familiar people (family ...)" (38.1%) but also "with the help of videos with simple explanations" (14.3%) were mentioned most frequently. It is clear that AAC users prefer to learn about AI with other AAC users. This result will be addressed again in the discussion.

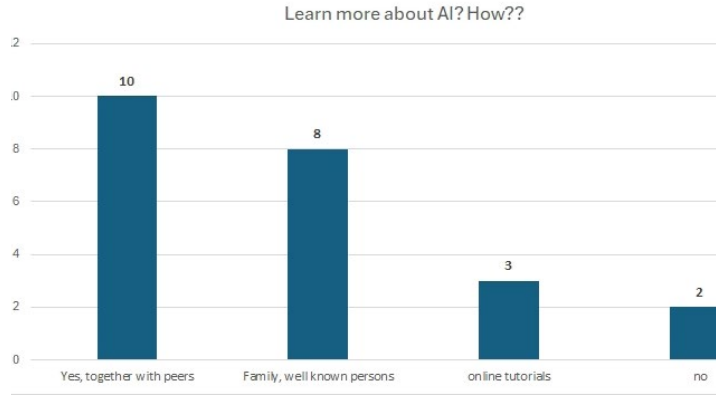


Fig. 8 - More learning about AI with

Media equipment/use of media

80.9% of AAC users own a computer. Smartphone ownership is even better: 95% of all respondents own a smartphone. Internet access is also available to all respondents (100%), with the majority being rather satisfied with the internet speed.

The surveyed group, 16 votes out of 21, predominantly rated their skills in dealing with digital media as very good (51%) to good (28.6%). However, two people noted that assistance was important. "Good mentally and when assistants understand me and I can guide them. Physically, only very limited with a joystick for a short time" (p 6).

As far as usage patterns are concerned, an initial analysis shows that emails are sent relatively frequently and respondents often use social media. Internet shopping and online banking were used less frequently. Digital content was rarely produced. Media use was linked to the motor skills of the AAC users. The question "What don't you like about digital media" also implied the answer: "I can't use digital media because of my physical disability or my aids don't allow me to use it". Here, 19% of respondents agreed. In the open response field, one person replied: "I can only use .... to a very limited extent because of my physical disability" (p 4).

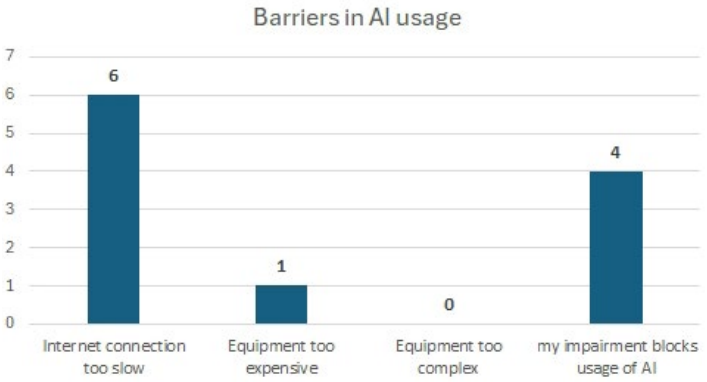


Fig. 9 - Barriers to the use of digital media

DISCUSSION

As there were no findings to date as to whether AAC users use AI at all, a questionnaire was developed to determine whether they use it and, if so, what types of use are associated with it. The results cannot be generalized and must be interpreted with caution, as 50% of the AAC users contacted did not take part in the survey. Two AAC users replied that they were not interested in the topic. The group of respondents can be characterized as follows: rather younger AAC users, good written language skills, according to their own statements competent in dealing with digital media. Many have good technical equipment and Internet access. This must be emphasized, as it would not have been expected in the context of digital divide.

No generalization can be made with regard to the participants. People with good written language skills and who are familiar with the use of digital media were interviewed. Due to possible motor impairments, the role of the assistant becomes significant. The following statements are quoted to illustrate this: "I only use it with assistance" (p 13), or "It's good in my head and when assistants understand me and I can guide them. Physically, I can only use it to a very limited extent with a joystick for a short time." (p 6). It is striking that 71% of respondents communicate using eye control. The topic of interconnectivity/interoperability appears to play a less important role, and this area should be examined in more detail. Interconnectivity/interoperability can be assigned to the design and usage barriers according to (Zamfirescu-Pereira, Wong, Hartmann & Yang, 2023) . Statements that the AI can only be used with assistants (p 13; p 15) or that "I can only use it myself to a very limited extent because of my physical impairment" (p 6) also fall into this category. One person would like "if there were other technical possibilities in the field of AAC with more word predictions" (p 7).

Certain language skills are important for prompting/prompt engineering. According to Weid-Goldschmidt, people from target group IV who use AAC in an age-appropriate manner were interviewed. The extent to which AAC users from the other target groups could benefit from artificial intelligence has yet to be determined. Nevertheless, the interviewees showed a great willingness (95.2%) to learn more about this topic, preferably with other AAC users or with the help of familiar people.

Respondents are less concerned about AI. One person replied "that people are not properly trained, especially people with disabilities, education helps against fear" (p 7). This means that specific offers for AAC users are considered important. Different AI applications and the rapid development are mentioned as problematic.

In terms of attitudes towards AI, positive things tend to be emphasized. Living more independently or being able to do things that were not possible before or learning completely new things is associated with AI. One person answered "perhaps being able to live more independently" (p 11). Since many AI applications are used by means of written language input and the participants have relatively good written language skills, it is possible that self-efficacy experiences have taken place through the use of AI. There may be hopes associated with AI that "AI can perhaps make my life better" (p12). Despite all the euphoria, one person warns. "You shouldn't lose yourself in it and keep your own personality" (p 19). Further discussions should be held with the target group in order to gain further insights.

BACK TO CONTENTS

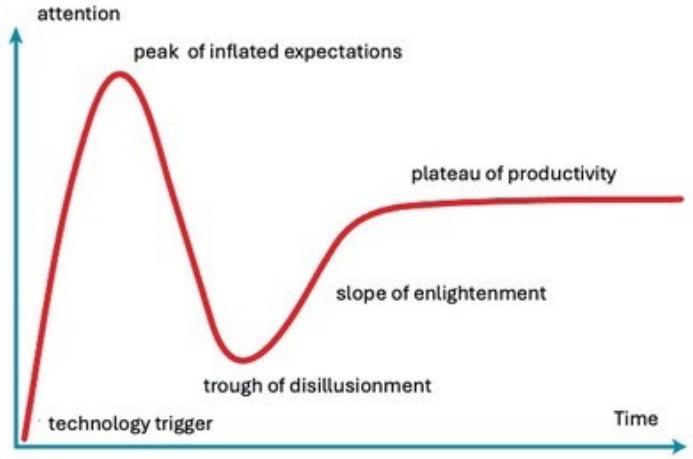


Fig. 10 - The Gartner Hype Cycle

Fig. 10 The Gartner Hype Cycle

The Gartner Hype Cycle visualizes how technological innovations develop public attention and generate acceptance. These phases are characterized by "technology trigger", "peak of inflated expectations", "trough of disillusionment", "slope of enlightenment", "plateau of productivity" (Mertens & Barbian, 2016, p. 302) . It remains to be seen to what extent AI plays a role for AAC users. We are currently in the "peak of inflated expectations" phase.

Conclusions

AI came to stay. Two AAC users gave an impressive demonstration of how they use AI at the speakers' conference on 21.03.25 in Cologne. It was decided in Cologne that there will be a working group on the topic of AI and AAC, in which AAC users and their needs will play an important role in initiating development processes. The following initial questions should guide this: What would be the content of a training course that could provide answers to this topic? Who is involved in training? What would be a suitable format?

In order to gain further insights into the use of AI by AAC users, interviews are conducted with AAC users to learn more about the barriers (Zamfirescu-Pereira et al., 2023) .

We would like to thank all AAC users who took part in the survey.

LITERATURE

Barry, D. (2014). *Die Einstellung zu Geld bei jungen Erwachsenen: Eine Grundlegung aus wirtschaftspädagogischer Sicht*. Wiesbaden: Springer. https://doi.org/10.1007/978-3-658-04788-7

Bohner, G. (2002). Einstellungen. In W. Stroebe, K. Jonas, M. Hewstone & M. Reiss (Eds.), *Sozialpsychologie* (pp. 265-315). Berlin, Heidelberg: Springer Berlin Heidelberg. https://doi.org/10.1007/978-3-662-08008-5_8

Bosse, I. & Hasebrink, U. (2016). *Mediennutzung von Menschen mit Behinderungen. Forschungsbericht. (Aktion Mensch e.V. & die medienanstalten - ALM GbR, eds.)*. (Aktion Mensch e.V. & die medienanstalten - ALM GbR, ed.). Berlin; Bonn. Available at: https://www.aktion-mensch.de/dam/jcr:8b186ca0-b0f1-46f8-acb1-a59f295b5bb4/aktion-mensch-studie-mediennutzung-langfassung-2017-03.pdf,

Edyburn, D. L. (2024). Research You Can Use. *Closing the Gap, 43*(2), 12-15.

Hargittai, E. (2002). Second-Level Digital Divide: Differences in People's Online Skills. *First Monday, 7*(4). https://doi.org/10.5210/fm.v7i4.942

Heidtmann, H. (2010). Unterstützte Kommunikation und Sprachheilpädagogik: Von der Sprache zur Kommunikation. *Sonderpädagogische Förderung heute, 55*(4), 343-364.

Krstoski, I. (2020). Digitale Sprachassistenten in der UK? *25*(3), 30–34.

McNaughton, D. & Light, J. (2013). The iPad and Mobile Technology Revolution: Benefits and Challenges for Individuals who require *Augmentative and Alternative Communication. Augmentative and Alternative Communication,29* (2), 107-116. Informa AAC Limited. https://doi.org/10.3109/07434618.2013.784930

Mertens, P. & Barbian, D. (2016). Digitalisierung und Industrie 4.0 – Trend mit modischer Überhöhung? *Informatik-Spektrum,39* (4), 301-309. https://doi.org/10.1007/s00287-016-0974-5

Morin, K. L., Ganz, J. B., Gregori, E. V., Foster, M. J., Gerow, S. L., Genç-Tosun, D. et al. (2018). A systematic quality review of high-tech AAC interventions as an evidence-based practice. *Augmentative and Alternative Communication,34* (2), 104-117. https://doi.org/10.1080/07434618.2018.1458900

Ragnedda, M. (2017). *The third digital divide: a Weberian approach to digital inequalities* (Routledge Advances in Sociology). London ; New York: Routledge, Taylor & Francis Group.

Rice, M. F. & Dunn, S. (2023). The Use of Artificial Intelligence with Students with Identified Disabilities: A Systematic Review with Critique. *Computers in the Schools,40* (4), 370-390. https://doi.org/10.1080/07380569.2023.2244935

Robinson, L., Schulz, J., Blank, G., Ragnedda, M., Ono, H., Hogan, B. et al. (2020). Digital inequalities 2.0: Legacy inequalities in the information age. *First Monday*. https://doi.org/10.5210/fm.v25i7.10842

Schlosser, R. W., Shane, H. C., Allen, A. A., Abramson, J., Laubscher, E. & Dimery, K. (2016). Just-in-Time Supports in Augmentative and Alternative Communication. *Journal of Developmental and Physical Disabilities,28* (1), 177-193. https://doi.org/10.1007/s10882-015-9452-2

Schulz, L. & Schmid-Meier, C. (2024). Assistive Technologien und Künstliche Intelligenz: Ein KI-Kompetenzmodell zum Einsatz im Klassenzimmer. *#schuleverantworten,4* (1). https://doi.org/10.53349/schuleverantworten.2024.i1.a397

Sennott, S. C., Akagi, L., Lee, M. & Rhodes, A. (2019). AAC and Artificial Intelligence (AI). *Topics in Language Disorders,39* (4), 389-403. https://doi.org/10.1097/TLD.0000000000000197

Sponholz, J. & Boenisch, J. (2021). Digitale Mediennutzung von Jugendlichen im Förderschwerpunkt Körperliche und motorische Entwicklung. *Zeitschrift für Heilpädagogik, 72*(11), 592–603.

Tetzchner, S. von & Martinsen, H. (2000). *Einführung in Unterstützte Kommunikation* (Edition S). (S. Vogel, transl.). Heidelberg: Winter.

Weid-Goldschmidt, B. (2015). *Zielgruppen unterstützter Kommunikation: Fähigkeiten einschätzen - Unterstützung gestalten* (Von Loeper Fachbuch) (Original edition, 2nd ed.). Karlsruhe: von Loeper Literaturverlag.

Wendt, O. (2023). Mobile AAC. In N. Hall, J. Juengling-Sudkamp, M.L. Gutmann & E.R. Cohn (Eds.), *Fundamentals of AAC: a case-based approach to enhancing communication* (pp. 39-50). San Diego, CA: Plural Publishing, Inc.

Yu, C., Schlosser, R., Fontana De Vargas, M., White, L. A., Koul, R. & Shane, H. (2024, July 15). QuickPic AAC: An AI-Based Application to Enable Just-in-Time Generation of Topic-Specific Displays for Persons Who Are Minimally Speaking. https://doi.org/10.20944/preprints202407.0999.v1

Zamfirescu-Pereira, J. D., Wong, R. Y., Hartmann, B. & Yang, Q. (2023). Why Johnny Can't Prompt: How Non-AI Experts Try (and Fail) to Design LLM Prompts. *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems* (pp. 1-21). Presented at the CHI '23: CHI Conference on Human Factors in Computing Systems, Hamburg Germany: ACM. https://doi.org/10.1145/3544548.3581388 ■

BACK TO CONTENTS

From Theory to Practice:

Applying AI and AAC to Foster Autonomous Authorship

Part 3 of a 3-part series: The intersection of artificial intelligence, augmentative and alternative communication (AAC), and writing instruction for students who need and use AAC

AUTHOR'S NOTE

This three-part series was written in deep gratitude to the students and families who invite me into their journeys as communicators, learners, and creators. Their persistence and imagination continue to reveal what is possible when we presume competence and prioritize authorship over access. Special thanks to the educators, therapists, and parents who model collaboration across settings, reminding us that meaningful literacy instruction is not about technology alone, but about connection, curiosity, and human potential.

Every generation of educators has faced a new tool that sparked fear before it became familiar. Calculators, spellcheck, word prediction, and speech-to-text were all met with myths and resistance. Yet we know the facts: these tools did not replace human thinking; rather, they expanded access and allowed more students to participate, make progress, and engage meaningfully in learning environments. Technology does not replace thinking or learning; it functions as a tool within the networks of support and collaboration that shape how we think and learn. Learning has never been a tool-free, solitary act. It has always involved collaboration with teachers, peers, editors, devices, and now AI. The question should not be whether AI tools should be involved, but rather on how students are taught to use them effectively. When used thoughtfully, this technology opens new doors for students to participate, communicate, and grow as learners.

As humans, we are all interdependent. The construction of communication in any form, with people or tools, is a defining feature of how humans think, write, and communicate. Communication is a human right. Students who use AAC deserve the same right to shared authorship, support, and technological assistance that we quietly grant to their non-disabled peers. We do not question the authorship of students who use Google Docs to brainstorm, Grammarly to revise, or speech-to-text to draft full essays on their phones. Spellcheck, autocorrect, predictive text, and even AI are built into nearly every device used by

BRENDA DEL MONTE, MA, CCC-SLP. Brenda is a speech language pathologist and an assistive technology evaluator and facilitator. Brenda Del Monte is a co-founder of Believe Beyond Ability, a non-profit organization that evaluates, determines, provides and trains those with multiple disabilities on assistive technology to increase independence. Brenda is also an author of the newly published book, "I See You In There," a collection of stories from her 20+ years of experience working with children and adults with disabilities. She is currently a co-host of the Awe and Wonder Podcast hosted by the Special Ed Tech Center.

SHARON REDMON, M.S. ATP. Sharon is a SpEd, GenEd teacher, and AT Specialist with almost 30 years of experience. She holds an M.S. in Adaptive Education: Assistive Technology from St. Norbert College and ATP from RESNA and is a Doctoral Candidate at Penn State University. Sharon's passion for AT and especially AAC began with her first teaching assignment in WI, where she became involved in WATI, and continues today with the WI AAC Network school committee and founding member of the Wisconsin Assistive Technology Regional Networks (WATRN). She also serves as a member of the Education Committee for USSAAC. Her varied career placements within WI, WA, and overseas schools have given her unique opportunities to combine her passion for AAC, literacy, and Assistive Technology. She is passionate about sharing her experiences with others so that we can all continue to learn together

BACK TO CONTENTS

writers, business professionals, teachers, parents, and students every day. We don't ask, "But is that really your work?" when a neurotypical human uses those tools. So why is this questioned when the writer has an access or communication disability?

Writing has never been a purely independent act. It is fundamentally collaborative, shaped by peers, teachers, editors, autocorrect, search engines, and even the red squiggly line. Yet when a student who uses AAC leverages AI to generate options, expand vocabulary, or organize ideas, the conversation shifts to dependence, cheating, or loss of authenticity. This matters because when AI is integrated into AAC systems, the conversation often shifts back to the myths of earlier times. We find ways to stop calling it assistive technology and instead label it "cheating" or "not their real work." As generative AI enters the world of AAC, the same question echoes through classrooms and IEP meetings. The truth as we see, is that this is not an either use AI or not use AI option, but layered and situational. We do not think we have the answers; however, we do know that the answer depends not on the technology itself, but on how we teach it and with it.

In our first article, Is It Cheating or Is It Access?, we explored this question through a historical lens, tracing how every major educational innovation, from the typewriter to text prediction, was once labeled "cheating." We argued that this fear often arises from discomfort with change rather than legitimate concerns about learning outcomes. For students who use AAC, especially those with complex access needs such as eye gaze or switch systems, this misconception has far-reaching implications. Denying AI support in the name of "integrity" often results in denying students authentic access to authorship. Writing, as the National Council of Teachers of English (2004) reminds us, is "a process of meaning-making through which students construct knowledge, communicate ideas, and demonstrate understanding." AI-enhanced AAC tools, when implemented with intention, make that process possible by reducing barriers of fatigue, access, and speed so students can focus on meaning, not mechanics.

In our second article, Integrating AI-Enhanced AAC into the IEP, we moved from reframing misconceptions to establishing structure. We outlined how Individualized Education Program (IEP) teams can embed AI features as assistive technology (AT) supports within the legal and instructional framework of the Individuals with Disabilities Education Act (IDEA). Drawing on Beukelman and Light's (2020) principles of communicative competence, Zabala's (2005) SETT Framework, and federal guidance from the U.S. Department of Education (2024), we emphasized the importance of documenting how AI and AAC features function as access tools rather than academic shortcuts. By explicitly addressing these supports in the Consideration, Present Levels of Performance (PLOP), Annual Goals, Special Factors, and Accommodations, educators ensure that students' voices are not only included but amplified through consistent and equitable access across settings.

This third article takes the next step, translating those frameworks into daily practice. It explores how AI and AAC can be integrated into writing instruction, therapy, and classroom routines to foster independent authorship. We examine practical applications of AI-supported AAC features during each stage of the writing process, planning, composing, revising, and publishing, and show how intentional use can promote autonomy, creativity, and authentic expression. hrough real examples, we show that when educators pair intentional instruction with the right tools, AI does not replace student thinking, it helps make it visible and accessible

Preserving Authorship Through Intentional Writing Opportunities

When Tiffany was assigned to create a Mother's Day card, the prompt was quickly modified to "think of three words that describe your mom." On the surface, this seems like a supportive adjustment, a way to help her complete the task within an allotted time. Yet this well-intentioned modification carried an unintended message: that we did not believe she could express more than three ideas, or that composing full sentences was beyond her ability. In our effort to "help," we risked diminishing the very purpose of the writing task.

Before adapting any assignment, educators and therapists must pause to ask: What is the intent of the writing? Is the goal to assess use of adjectives, to celebrate a holiday, or, most importantly, to express affection and appreciation? As Graham and Perin (2007) note, effective writing instruction must align task design with communicative purpose. When we reduce expectations without preserving that purpose, we may inadvertently remove the opportunity for authentic authorship and self-expression.

When Tiffany selected the word loud to describe her mother, it opened a window into her unique perspective. "Loud" could mean joyful laughter, animated storytelling, or perhaps moments of frustration. A well-meaning educator or paraprofessional might have encouraged her to choose a more "positive" adjective, unintentionally rewriting her message. To preserve authorship, we instead asked AI to expand upon her original sentence, "My mom is loud." The AI generated multiple interpretations, both positive and negative. Presented with those options, Tiffany clarified her meaning: her mom is boisterous, energetic, and always laughing.

The word boisterous was not programmed into her AAC device, nor could Tiffany spell it independently. Yet, when shown several related options, she deliberately chose boisterous, a complex, nuanced word that accurately captured her intent. This decision demonstrated strong receptive vocabulary and conceptual understanding, even though her expressive vocabulary was limited by the language set within her device. As Beukelman and Light (2020) emphasize, supporting communicative competence involves ensuring access not only to vocabulary but to the means of conveying intent.

BACK TO CONTENTS

Tiffany's story reminds us that writing instruction for AAC users must go beyond task completion. It must honor the purpose of writing, to express, connect, and represent one's own voice. When AI is used to expand language possibilities rather than replace them, it becomes a bridge between thought and expression, restoring authorship to the student. Tiffany's story illustrates that preserving authorship requires more than providing access, it demands that we protect the intent behind every word, ensuring that support enhances, rather than edits, the student's voice.

Amplifying Voice and Identity Through Authentic Language

When Jenny's class was asked to choose an object that represented their summer, the goal was simple: share a personal story. The task didn't require formal grammar or structured paragraphs, it invited students to express themselves naturally, using language that reflected who they are. Jenny, who communicates using eye gaze with her AAC device, selected a jar of sand. Through her device, she shared the words "Oregon," "beach," and "sand." After a few clarifying questions, we confirmed that she had collected sand on a beach in Florence, Oregon.

When we entered her initial message, "I got sand from Florence Oregon", into an AI-supported writing tool and asked it to expand using teenage vernacular, it produced four versions. Jenny's favorite was: "I collected some sick beach sand when I was in Florence, Oregon." She smiled instantly. This sentence matched the tone and style she had imagined, but could not easily construct through her device's limited vocabulary or the slow pace of eye gaze selection.

As Light and McNaughton (2014) describe, communicative competence in AAC involves more than access to words, it includes the ability to convey intent, emotion, and social identity. For Jenny, choosing expressions like "sick," "dope," and "rad" reflected her teenage voice, humor, and cultural belonging. These words were not part of her programmed vocabulary set, and even if they were, locating them would have been physically exhausting after composing the key content words. AI bridged this gap by providing linguistically and socially relevant options from which she could choose, preserving both autonomy and authorship.

When prompted to describe what she enjoyed most about her trip, Jenny offered the words "nice weather," "relaxing," and "drink grandpa grandma mom funny." Entered into the AI tool, these fragments expanded into multiple sentence options. Jenny selected: "Overall it was a rad trip. The weather was nice, super relaxing, and seeing Grandma, Grandpa, and Mom get their drink on was hilarious." She laughed, nodded, and, most importantly, recognized herself in the writing.

Throughout the process, Jenny was encouraged to think in her own "inside voice" before reviewing AI-generated suggestions. When her father suggested "awesome" instead of "rad," Jenny shook her head, signaling her preference. After viewing a list of synonyms, she confirmed her choice. The technology did not write for her; it offered possibilities that she curated based on her personality and linguistic intent.

As Beukelman and Light (2020) and Sennott et al. (2019) emphasize, AAC interventions that promote authentic authorship depend on balancing cognitive and linguistic scaffolds with respect for user agency. AI, when used ethically and intentionally, can serve as that scaffold, expanding linguistic reach while keeping the student firmly in control of meaning. Jenny's story illustrates how AI can serve as a language amplifier, extending expressive range, honoring identity, and ensuring that what students say reflects not only what they mean, but who they are.

When Access Meets Agency: From Choice to Voice

Alexis is a 10th-grade student who uses eye gaze to access an 84-button AAC system. She is fully included in general education and participates in courses such as U.S. History, where her peers were recently assigned to "write three tweets that Alexander Hamilton might post today." The task allowed all students to use AI, and at least one tweet needed to include a graphic.

At home, Alexis and her parents initially approached the assignment with apprehension. Although accommodations had been made for extended time, they expected the task to take hours, a familiar scenario. In many previous assignments, Alexis's "written work" often reflected her parents' best guesses rather than her own ideas. Her yes/no responses constrained by time and access typically shaped adult interpretations rather than authentic authorship (Beukelman & Light, 2020).

This time, the use of AI fundamentally shifted that dynamic. When asked what kind of tweet she wanted to begin with, Alexis quickly indicated "political." She added, "equality for the states." This idea guided the next step: prompting an AI model to generate examples of tweets Alexander Hamilton might write about equality among states. Alexis independently selected part of the second option and combined it with the ending of a fourth, creating her own unique message. Together, we reviewed vocabulary options to ensure comprehension and used the AI's "similar words" feature to confirm her intent.

For the second tweet, Alexis announced she wanted something social: #HangingWithMyHomies. When asked who Hamilton's friends might be, her parents guessed aloud, George Washington? Yes. Aaron Burr? Yes. Her mother hesitated, recalling that Burr killed Hamilton. Alexis remained confident, so we asked AI for clarification. The model confirmed that Hamilton and Burr were indeed acquaintances and allies before their infamous duel, a nuance Alexis already knew from class.

When prompted about what they might be doing, she replied, "bowling." AI generated a vivid image of Alexander Hamilton, George Washington, and Aaron Burr bowling together. Pure joy filled the room. Alexis's parents realized they never would have offered such an option, it wasn't within their own schema of "acceptable" historical representations. Yet it was exactly what made the assignment fun and imaginative for their daughter. As Light and McNaughton (2014) remind us, communicative competence extends beyond access; it requires opportunities for autonomous self-expression in social and academic contexts.

Alexis then requested another scene, this time at the hair salon, with #LookingPretty. Within 30 minutes, she had completed all three tweets, each reflecting humor, historical understanding, and personality. What might once have taken hours, ending in frustration and tears, became a moment of laughter and collaboration. Later, Alexis texted a mutual friend to say how much fun her "Hamilton tweets" had been.

This experience highlights a critical distinction: providing choice is not the same as preserving voice. As educators, we often equate yes/no or limited-choice tasks with empowerment, when in reality, they may narrow opportunities for authentic participation (Zabala, 2005). AI, when used intentionally within AAC contexts, can expand, not replace, student authorship by offering creative, contextually rich options that reflect the user's imagination and agency. Alexis's story demonstrates that when AI is integrated as a scaffold rather than a shortcut, it transforms access into agency, "choice-making" into true authorship, and restores the joyful, human essence of learning.

Conclusion: Redefining Authorship for the Next Generation

The future of literacy will not be written by hand, it will be co-authored through technology, equity, and imagination. For students who use augmentative and alternative communication (AAC), artificial intelligence (AI) is not a futuristic concept; it is a present necessity, a bridge between thought and expression. The question is no longer if we integrate AI, but how we do it responsibly, creatively, and with the student's voice at the center.

Across this three-part series, we have reframed the conversation around AI and AAC from suspicion to possibility. In Part 1, we challenged the misconception that using AI to support writing is "cheating," showing that equitable access to language tools is a right, not a privilege (National Council of Teachers of English, 2004). In Part 2, we grounded that philosophy in practice, outlining how teams can embed AI features within the Individualized Education Program (IEP) to ensure consistent, transparent, and ethical implementation (Beukelman & Light, 2020; Zabala, 2005; U.S. Department of Education, 2024). And in this final article, we brought those ideas to life through the authentic stories of Tiffany, Jenny, and Alexis, students whose writing journeys reveal that AI does not replace human creativity; it releases it.

Tiffany reminded us that authorship begins with intent. By honoring the purpose behind her words and using AI to explore nuance, we witnessed her move from compliance to true expression. Jenny demonstrated that authorship reflects identity, showing how AI can expand vocabulary and style so students communicate not only what they mean, but who they are. And Alexis showed us the power of agency, that when students co-create with technology, they move beyond making choices to making meaning.

Together, these stories illuminate what research has long supported: that authentic literacy instruction for AAC users must prioritize independence, communication competence, and participation (Light & McNaughton, 2014; Sennott et al., 2019). AI-enhanced AAC offers new pathways for this instruction, not as a shortcut, but as a scaffold for thinking, reasoning, and belonging.

As we look forward, the charge for educators, therapists, and families is clear: to design learning environments where AI and AAC work together to amplify, not define, the student's voice. This requires intentional teaching, ethical reflection, and the belief that every learner has something original to say.

When implemented with purpose and guided by humanity, AI-enhanced AAC does more than remove barriers; it redefines authorship itself. It reminds us that literacy is not a test of motor ability or vocabulary recall, but an act of agency, creativity, and connection. The pen, the keyboard, and now AI all serve the same enduring goal: to ensure that every student, regardless of access method, can see their thoughts reflected in words, and their voice heard in the world.

REFERENCES

Beukelman, D. R., & Light, J. C. (2020). *Augmentative and alternative communication: Supporting children and adults with complex communication needs* (5th ed.). Paul H. Brookes Publishing.

National Council of Teachers of English (NCTE). (2004). *NCTE beliefs about the teaching of writing*. https://cdn.ncte.org

U.S. Department of Education, Office of Special Education Programs. (2024). *Myths and facts surrounding assistive technology devices*. https://sites.ed.gov/idea/files/AT-Myths-and-Facts.pdf

Zabala, J. S. (2005). Using the SETT framework to level the learning field for students with disabilities. *Assistive Technology Outcomes and Benefits, 2*(1), 1–15.

Graham, S., & Perin, D. (2007). *Writing next: Effective strategies to improve writing of adolescents in middle and high schools*. Alliance for Excellent Education.

Light, J. C., & McNaughton, D. (2014). Communicative competence for individuals who require augmentative and alternative communication: A new definition for a new era of communication? *Augmentative and Alternative Communication, 30*(1), 1–18. https://doi.org/10.3109/07434618.2014.885080

National Council of Teachers of English (NCTE). (2004). *NCTE beliefs about the teaching of writing*. https://cdn.ncte.org

Sennott, S. C., Akagi, L., Lee, M., & Rhodes, A. (2019). AAC and artificial intelligence (AI). *Topics in Language Disorders, 39*(4), 389–403. https://doi.org/10.1097/TLD.0000000000000197

BACK TO CONTENTS

YOUR PARTNER FOR ASSISTIVE TECHNOLOGY

Summary:

In this article, IRIS explains more clearly our commitment in helping daily the complete educational sector and more especially supporting the Assistive Technology. Imagine a classroom where technology seamlessly supports your daily teaching and helps every child thrive, especially those with DYS challenges.

The solutions that IRIS can provide to support you in implementing assistive technology are indispensable. We have devoted a great deal of time and resources to the creation of effective, universally affordable digital solutions that are simple and easy to use when supporting, training, and improving the performance of dyslexic children every day.

IRISPEN FAMILY - THE REVOLUTIONARY READING PEN WITH ASSISTIVE TECHNOLOGY

The IRISPen Reader 8 is especially an educational helping tool. Makes part of the environment of Assistive Technology & Dyslexia Learning Aid Technology.

Only offline mode (No Wifi Needed). USB-C headset is included in the IRISPen Reader version for better concentration during work sessions, or possibility to connect to your Bluetooth air pods for the IRISPen Air version.

Assistive Technology: Empower your child's learning by saying goodbye to exam anxiety! Scan questions and provide immediate reading assistance for your child.

Dyslexia Learning Aid Technology: Our technology isn't just about scanning; it's a lifeline for dyslexic individuals and their families or teachers. Read aloud, highlight text, and offer crucial reading assistance. This scanner doubles as a Dyslexic Learning Aid, fostering inclusive education. Helping DYS children in their everyday life.

The DYS Children's helper, IRISPen Reader 8, is your go-to companion. Empower learning, enhance communication, and transcend barriers with a tool that's as versatile as it is impactful. Elevate every learning experience and embrace success, one scan at a time!

On top of, a Collins Dictionary is also included in the IRISPen Air version.

KEY FEATURES IRISPEN FAMILY

- **Fully offline for full data security:** no foreign cloud server.
- **USB-C headset** is included in the product (for the IRISPen Reader 8).

SANDRINE GYSBRECHT, Event, Communication & Education Specialist at IRIS. As an Event, Communication & Education Specialist at IRIS, I bridge the gap between technology and (Inclusive) education. My role allows me to connect constantly with numerous education professionals, gathering valuable insights that help shape and refine IRIS's dedicated solutions for the education sector. By fostering these relationships and understanding educators' needs, I contribute – in collaboration with the R&D team – to the development of innovative products that empower learning and accessibility. Also, I always welcome any input form users and professional so we can continue to develop tools with real life help.

BACK TO CONTENTS

- **Scan text and save:** you can scan directly text lines, save the lines as a file, and export the file to your computer. This function is available offline for 48 languages.
- **DYS text-to-speech:** you can scan text lines and these lines are converted instantly into speech. These functions are available offline for 5 languages (English, French, German, Italian, Spanish).
- **Live Recording:** you can live record voices during class for example and save your record as an audio note.
- **Photo OCR and read aloud (& translation):** You can take a picture of a text, and the text will be instantly recognized and changed into editable text. This function is available offline for 15 languages.
- **Settings:** you can decide about your own settings for the optimal use of your IRISPen Reader 8. Interface: 11 Languages: English, French, German, Italian, Spanish, Portuguese, Dutch, Danish, Swedish, Romanian, Czech.
- **Collins Dictionary**

Product Name	IRISPen Reader	IRISPen Air 8
Pen Scanner	✓	V
LCD Color Screen & LCD touch screen	✓	V
OFFLINE OCR	✓ 48 languages OFFLINE	✓ 48 languages OFFLINE
OFFLINE Dyslexic OCR Text to speech	✓ 5 languages (English, French, German, Italian, Spanish) OFFLINE	✓ 9 languages (English, French, German, Italian, Spanish, Danish, Swedish, Romanian, Japanese) OFFLINE
Scan text and Numbers (OFFLINE)	✓	✓
OCR on the Pen Scanner	✓	✓
Text to Speech and read loud what you scan	✓	✓
Headset USB-C Compatible	✓	X
APP Scan Text & Save : 48 OCR languages OFFLINE	✓	✓
APP DYS_text_to_speech OFFLINE	✓	✓
APP Photo OCR - OFFLINE	✓ Yes 15 languages OFFLINE	X
APP MP3	X	✓
APP Dictionnary Collins UK	X	✓
APP Photo Translation (Text to speech – OFFLINE)	X	✓ – 16 languages (English, French, German, Italian, Spanish, Dutch, Polish, Czech, Russian, Ukrainian, Portuguese, Swedish, Japanese, Greek, Turkish, Simplified Chinese)
APP Scan Translation (Text to speech – OFFLINE)	X	
APP IRISPen connection (Win/Mac/iOS/Android)	X	✓
APP Favorites	X	✓
APP Settings	✓	✓
SD Card slot (not provided)	X	X
USB Powered	✓	✓
Headset	✓ USB-C earphones in the box	✓ Bluetooth headphones only - not supplied
OS Compatibility	Closed System	Win Mac iOS Android
MSRP – Public price	149€ / 149£ / 149 USD	199€ / 199£ / 199 USD

BACK TO CONTENTS

DISCOVER THE IRISPEN READER IN VIDEO

IRISPen Reader 8 - Portable scanner
https://www.youtube.com/watch?v=4pTDXxdvycg

Language interface
https://www.youtube.com/watch?v=2Lk-nZyUTFc

IRISPen Reader Start
https://www.youtube.com/watch?v=y6rM657QEik

Left-Right handed
https://www.youtube.com/watch?v=asnSn2r3WdQ

DYS Functions
https://www.youtube.com/watch?v=tDb3FMvJUBM

Live Recording
https://www.youtube.com/watch?v=7PSGcoMBhlU

BACK TO CONTENTS

OCR Language
https://www.youtube.com/watch?v=fHEi0T-aw3Q

USB Plug
https://www.youtube.com/watch?v=RkpIOzTkPzM

Photo OCR
https://www.youtube.com/watch?v=8GXIOR2gTj8

Scan & Save
https://www.youtube.com/watch?v=fvDVVrnssbk

IRISCAN VISUALIZER 7 DYSLEXIC

VISUALIZER, DOCUMENT CAMERA, AND PORTABLE SCANNER — WITH THAT EXTRA, MEANINGFUL TOUCH!

The IRIScan Visualizer is an essential tool for teachers who want to enhance their teaching methods and optimize student engagement. With its high-quality visuals, user-friendly interface, and powerful software, it is the perfect tool for modern classrooms. Whether you teach in person or remotely, the IRIScan Visualizer is a versatile and effective solution for sharing documents, images, and presentations.

But there's an added bonus:

The "Dyslexic" version of the IRIScan Visualizer gives you the option to use the product with two distinct software programs, depending on your current educational needs:

- With the **Readiris Visual** Software (Interactive Visualization Software – included by default): Readiris Visual is a powerful visualization tool for education. In addition to OCR in over 138 languages, it offers various annotation tools,

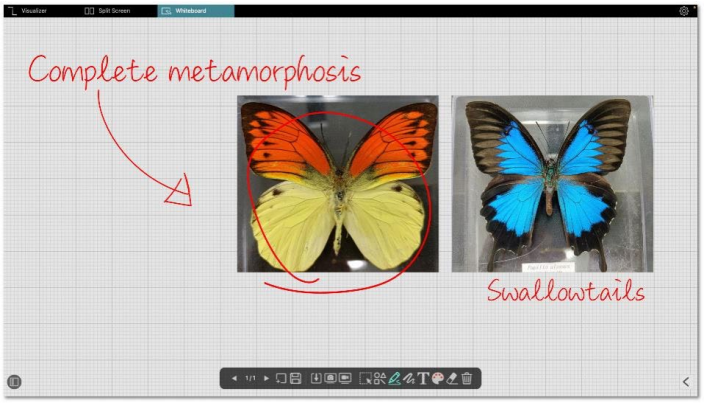
BACK TO CONTENTS

split-screen comparison, picture-in-picture recording, an interactive whiteboard, picture-in-picture functionality on the whiteboard, easy image addition to the whiteboard via drag-and-drop, performance at 30 FPS in key resolutions (4K), and the ability to modify existing annotation' colors to further enhance the user experience.

IRIScan Visualizer 7 - Product discovery
https://www.youtube.com/watch?v=mGakf8lWpjw

- With the **Readiris Dyslexic** Software, which allows you to:
  - Read aloud all types of books, documents, and digital files.
  - Zoom in/out on text for better readability.
  - Change the font, its size, its color, and even the background color of the text to further improve readability. You can also edit the text itself.
  - Read aloud entire sentences or repeated words.
  - Read word by word.
  - Highlight each word in the text as it is read aloud to improve diction.
  - Adjust reading speed to your own pace (faster or slower).
  - Manually adjust the volume and reading speed, which will be saved in the generated audio format (.WAV or .MP3).
  - Recognize 138 languages.
  - Choose from a wide range of simple output formats (DOCX – JPEG – MP3 – WAV – PDF).

Basically, IRIScan Visualizer 7 Dyslexic can meet a very wide range of educational needs and is fully part of the IRIS'"Assistive Technology" dedicated product range.



USAGE VALUES IRISCAN VISUALIZER 7

- Teach, Co-Work and shares with others in Ultra HD quality video 4K
- Stream documents, textbooks , and images
- Plug & play compatible with all conferencing software
- Shared experience across classroom students
- Enable scanning powerful technology powered by IRIS world best technology

IRISCAN BOOK 7 DYSLEXIC

WHY STUDENTS WITH LEARNING DIFFERENCES NEED A MOBILE SCANNER

Traditional scanners are bulky, desk-bound, and power-hungry—hardly ideal for students with dyslexia or dyspraxia who thrive on flexibility and simplicity. The IRIScan Book 7 Dyslexic is a true portable scanner that fits in a backpack, charges via USB-C, and works without a PC. Whether you're in a classroom, library, or at home, it's ready to scan books, worksheets, and notes in seconds.

BACK TO CONTENTS

IRIScan Book 7 - Your portable document and book scanner for life
https://www.youtube.com/watch?v=8vvj8O7Y5-Q

DESIGNED FOR ASSISTIVE TECHNOLOGY

This edition goes beyond scanning. It includes Readiris Dyslexic, a powerful assistive software that transforms scanned documents into dyslexia-friendly formats. Students can adjust fonts, background colors, and reading speeds to suit their needs. It also supports text-to-speech, helping learners with reading difficulties follow along with highlighted text.

HOW IT SUPPORTS STUDY HABITS - STUDENTS CAN:

Scan lecture notes and handouts in real time.

Build a searchable digital library of textbooks and worksheets.

Convert scans into editable Word, searchable PDFs, or audio files—no manual retyping needed.

Use Readiris Dyslexic to listen to scanned content, adjust visual presentation, and export study-ready formats.

Built for Real School Life - Forget marketing fluff—here's what matters:

Fits in a folder or laptop sleeve.

Scans a page in under five seconds at full resolution.

Handles MicroSD cards up to 32 GB.

One USB-C charge covers 150–200 pages.

Converts image-only PDFs into accessible formats that general tools like Siri or ChatGPT can't handle.

IRISCAN BOOK 7 DYSLEXIC IN ACTION:

This scanner is more than a tool—it's a learning companion. It helps students with dyslexia and dyspraxia capture, understand, and retain information in ways that suit their unique learning styles. With Readiris Dyslexic, it becomes a bridge between printed material and accessible digital content.

Whether you're a student, parent, or educator, the IRIScan Book 7 Dyslexic is a smart investment in Assistive Technology. ■

BACK TO CONTENTS

UPCOMING WEBINARS

Assistive Tech on a Budget: Simple Solutions for an Inclusive Classroom

By Keri Bridges

This webinar will focus on affordable, low-cost assistive technologies to help educators enhance classroom practices and support diverse student needs, including those in special education. It will explore a range of tools and strategies that foster an inclusive learning environment, helping students engage, succeed, and thrive academically.

Educators will gain practical, actionable insights on integrating these technologies into their teaching to improve student engagement, learning outcomes, and overall classroom dynamics, regardless of formal accommodations. The webinar aims to provide cost-effective solutions that can be immediately implemented in the classroom..

.

AI-Magine the Possibilities 2.0

By Dr. Tiffanie Zaugg

AI is a powerful support tool for creating inclusive classrooms, not a replacement for instruction. It functions by helping to personalize, differentiate, and equalize access to learning, aligning closely with the principles of Universal Design for Learning (UDL).

This webinar will explore how Artificial Intelligence (AI) can create inclusive classrooms that support diverse learners. You will begin by discussing how AI serves as a crucial support tool to personalize and differentiate learning, aligning with the principles of Universal Design for Learning (UDL). The session will then identify and describe AI supports for core subjects, including reading, writing, and mathematics. Next, you will learn about AI support for accessibility, including solutions for individuals with vision loss, hearing impairment, and those who use Augmentative and Alternative Communication (AAC). Finally, you will learn a four-step framework for adapting these technologies to meet specific, measurable IEP goals.

Assistive Technology to Support Mental Health

By Cassie Frost

Mental health is more than a buzzword—it is a critical factor in student success, both academically and socially. In today's educational environments, students face increasing demands on their time, attention, and emotional resilience. For students with disabilities such as ADHD, Autism, learning disabilities, or intellectual disabilities, these demands can amplify challenges with executive functioning, emotional regulation, and social interactions.

During this session, we'll explore how assistive technology can support students' social, emotional, and mental health needs in general and special education settings. Participants will learn about low-tech and high-tech tools that promote self-regulation, reduce anxiety, build coping skills, and create more emotionally accessible learning environments. From browser extensions and wearable timers to apps for mindfulness and emotional tracking, this session will provide practical, classroom-ready strategies and resources.

LOG IN TODAY!

Do you need to document your learning? Members simply view an archived webinar and, upon completion, can request CEUs and/or certificate a of contact hours. *It is really just that simple.*

www.closingthegap.com/webinars/archived-webinars/

Access for Totally Blind Students with Complex Learning Needs

Summary:
Little to none switch access software has been developed for totally blind students with complex learning needs. There are only a few switch access programs that are available and even when an app is accessible it may not have value due to visual content. Suggestions for configuring iOS Switch Control. No basic writing app is available for totally blind students with complex learning needs; this is the most critical need. AAC apps are accessible.

OVERVIEW

Little to none switch access software has been developed for totally blind students with complex learning needs. There are a few switch access programs that happen to be accessible. Hopefully this article will focus attention on this concern and software will be developed for this population group. This discussion also applies to CVI students in Phase I; these students frequently access everything through the auditory channel.

CVI APPS

There are many CVI apps that are available for students with usable vision. That is not the topic of this paper. This paper is focused on totally blind students with complex learning needs and CVI students in Phase I. This paper will focus software that does not require any vision to access.

SWITCH ACCESSIBLE SOFTWARE WITHOUT CONCERNS

Rad Sounds: R. J. Cooper

Counting Songs Bundles: Inclusive Technology

Sensory Sound Box: Cognable

Sounding Board: Ablenet

BRUCE MCCLANAHAN, Assistive Technology Consultant/Teacher of the Visually Impaired Chandler, AZ. Bruce has a Masters in the Education of the Visually Impaired from the University of Arizona and Orientation and Mobility certification from San Francisco State University. Bruce worked as an assistive technology specialist for the WA State School for the Blind for 36 years, he is currently an independent contractor. Throughout his career he has had a strong interest in computer access for blind and low vision students with complex learning needs. Bruce has written training manuals on the APH Chameleon 20, APH Mantis Q40, and JAWS. - intellibraille@gmail.com.

BACK TO CONTENTS

SWITCH ACCESSIBLE SOFTWARE WITH CONCERNS

Monarch Reader - https://monarchreader.com/
Tar Heel Gameplay - https://aacgameplay.com/

Monarch Reader & AAC Gameplay are accessible, but the visual content of these programs in many cases is not meaningful for totally blind students with complex learning needs. These programs are used because nothing else is available, sad.

IOS SWITCH CONTROL

Suggestions for configuring iOS Switch Control. It is useful in some cases to place tactual items on the iPad if the location of the item on the screen is consistent or to develop an iOS Switch Control Recipe.

1. Switch Control: Turn on or have shortcut enabled or use Siri
2. Switch Control: Configure two switches. Set the switch content of switch 1 set to Spacebar and the switch content of switch 2 set to Enter.
3. Set switch 1 to "Move to Next Item."
4. Set switch 2 to "Select"
5. Scanning Style: Manual
6. Switch Control Mode: Item Mode
7. Tap Behavior: Always Tap
8. Focused Item After Tap: Current
9. Gliding Cursor: Off (Relatively new option)
10. Sound Effects: On
11. Speech: On
12. Group Items: Off
13. Large Cursor: On

IPAD APPS THAT CAN BE MADE ACCESSIBLE WITH IOS SWITCH CONTROL

It would be great to share if individuals are aware of other apps that can be made accessible for totally blind students with complex learning needs with switch control.

1. Bus HD: Free app developed by Duck Duck Moose. Consider placing a tactual marker on the right arrow, the locations are consistent in this app, or develop an iOS Switch Control Recipe. (Left and right arrows just say "Button.")

2. I Hear Ewe: Developed by Claireware Software, this app works awesome with switch control for totally blind students with complex learning needs!

3. I Like Books: Developed Innovative Investments Limited. This is a good app to place tactual markers on the left and right arrows. Or to develop an iOS Switch Control Recipe. In many cases the visual content of these books is not meaningful, but this product is used because that is all there is, again sad.

4. Sound Touch 1 and Sound Touch 2: Developed by SoundTouch Interactive LTD. (Necessary to tap iPad screen to go back after an item is selected.)

5.What's That Sound: Developed by Different Road to Learning

APH JOY PLAYER

The APH Joy Player is a specialized electronic device from the American Printing House for the Blind. This device allows teachers to copy WAV and MP3 files to it that are then accessed with this device. This device has 5 large buttons on the top. The center one starts and stops, the buttons on the left and right go forward and backward through the file, and the outer buttons are volume down and volume up. This device also supports 5 switches that can replicate the functions of the buttons.

ACCESSIBLE BEGINNING WRITING APP FOR TOTALLY BLIND STUDENTS WITH COMPLEX LEARNING NEEDS

None!

I frequently advocate with software companies both within and out of the assistive technology field to develop a beginning writing app specifically for totally blind students with complex learning needs and have so far have been unsuccessful. The purpose of this article is to encourage a software company to consider this, this is certainly a great need and an untapped market. Teachers of the Visually Impaired frequently ask what is next after the student learns the few cause and effect apps that are accessible, for many years the answer has been nothing. It is a

BACK TO CONTENTS

huge jump between cause/effect apps and the accessible AAC apps..

AAC APPS

There are at least four or more AAC apps that are accessible to totally blind students with complex learning needs. To be accessible the AAC app needs to have switch access and auditory scanning. Everything needs to be accessible auditorily. The SLP needs to have the capability of designing a very simple interface when information is accessed auditorily. The accessibility of AAC apps is the one bright area of this paper. ■

BACK TO CONTENTS

Engaging All Learners through Social Interactions, Visual Supports, & AAC:

The Impact of a Social-Emotional, UDL Framework on One District's Journey

AMY THOMSEN, MS, CCC-SLP, Instructional Coach for Assistive Technology – AAC, Forsyth County School. Amy earned a bachelor's degree from Augustana College in Rock Island, Illinois and her master's degree from Illinois State University. Throughout her 30+ year career as an SLP, Amy has worked in a variety of settings from schools to private practice to rehab hospitals covering various populations including hearing impaired, birth to 3, developmentally and learning disabled, Autism, TBI, and general education. Areas of special interest include complex communicator language development and social development, neurodiversity, peer interaction, and coaching AAC communication partners. Amy has been a LAMP Certified Provider since 2017. She has worked for Forsyth County Schools for the past 20 years.

JESSIE NELSON, EdS, CCC-SLP, Jessie is currently an Instructional Coach for Assistive Technology at Forsyth County Schools, where she supports educators and students in effectively implementing assistive technology to enhance communication and learning outcomes. She is also a speech-language pathologist with 20 years of experience serving a diverse pediatric population in both educational and clinical settings. Jessie holds a bachelor's and master's degree in communication disorders from Valdosta State University, as well as an Education Specialist degree in Curriculum and Design from Lincoln Memorial University.

JENNIFER RO, MA, CCC-SLP. Jennifer is the Director of Tools for Life, Georgia's AT Act program at Georgia Tech. As a speech-language pathologist of 30 years, Jennifer has developed extensive knowledge and experience in Assistive Technology (AT) with specific focus on augmentative and alternative communication (AAC) and physical access.

Prior to joining TFL, Jennifer's work focused on collaborative and coaching models of AAC service delivery, with emphasis on social-emotional engagement in the public schools. Jennifer has also provided Technical Assistance to school districts in Georgia through her work with Marcus Autism Center, a large research center in Atlanta.

Her clinical experience in public schools, private clinics, early intervention programs, and community-based adult homes and workshops, informs and drives Jennifer's interests in developing the communication and language abilities of children and adults with complex communication and physical access needs. As a result, Jennifer recognizes the unique perspective of individuals, caregivers, school staff and private service providers, as they progress through life's stages.

Additionally an independent AT-AAC Consultant, Jennifer obtained both her bachelor's and master's degrees in Speech-Language Pathology from Northwestern University. She has presented extensively on various topics related to AT and AAC.

BACK TO CONTENTS

Summary:

This article details a school district's effort to maximize student engagement in the classroom. After several years of introducing and implementing a systemwide core vocabulary approach with students who require AAC, the district's AAC specialists still noted that many students' communication abilities slowed or plateaued. Though school-based SLPs and educators were trained to use specific district AAC tools and evidence-based AAC strategies, this frequent pattern of slowing indicated an additional approach was needed: a focus on overall student social-emotional engagement in the classroom to boost student motivation to participate and communicate throughout learning.

In addition to the district AAC tools and supports already in place, key efforts across a decade included developing comprehensive district training and resources for school-based educators providing specialized instruction. These resources included common terminology to describe social and communication development and priority targets; a standard set of visual supports; and a proactive focus on highlighting why, what, and how to facilitate student social-emotional engagement through a UDL framework. The overarching goal was to proactively foster social-communication growth and learner engagement for all students receiving specialized instruction; which in turn enhances educators' and SLPs' abilities to facilitate continued communication development for students who use AAC.

Over the past decade, school districts across the United States have increasingly emphasized focusing on social-emotional engagement within instructional frameworks for learning, connection, and overall well-being. Universal Design for Learning (UDL), a research-based framework supporting how we learn, provides a flexible and inclusive way to look at how all educators can enhance student engagement for learning. A specific focus on social-emotional engagement through a UDL lens, that also takes into account a student's developmental level, provides educators with additional tools and strategies to maximize engagement for those students receiving specialized instruction.

THE CHANGING EDUCATIONAL LANDSCAPE

From our perspective, the last 15 years of working in a large school district have revealed a shift in the school landscape on various levels. Educators have noted changes in classroom engagement as students are exposed to the rise of technology and cell phones; in conjunction with recovery from the unique experiences of pandemic-era learning.

These changes have brought increased awareness of students' mental health needs, capacity for learning, and the need for a supportive school environment. With greater recognition of anxiety, trauma responses, and emotional regulation challenges, schools are now more focused than ever on creating safe, supportive environments that foster connection, resilience, and well-being.

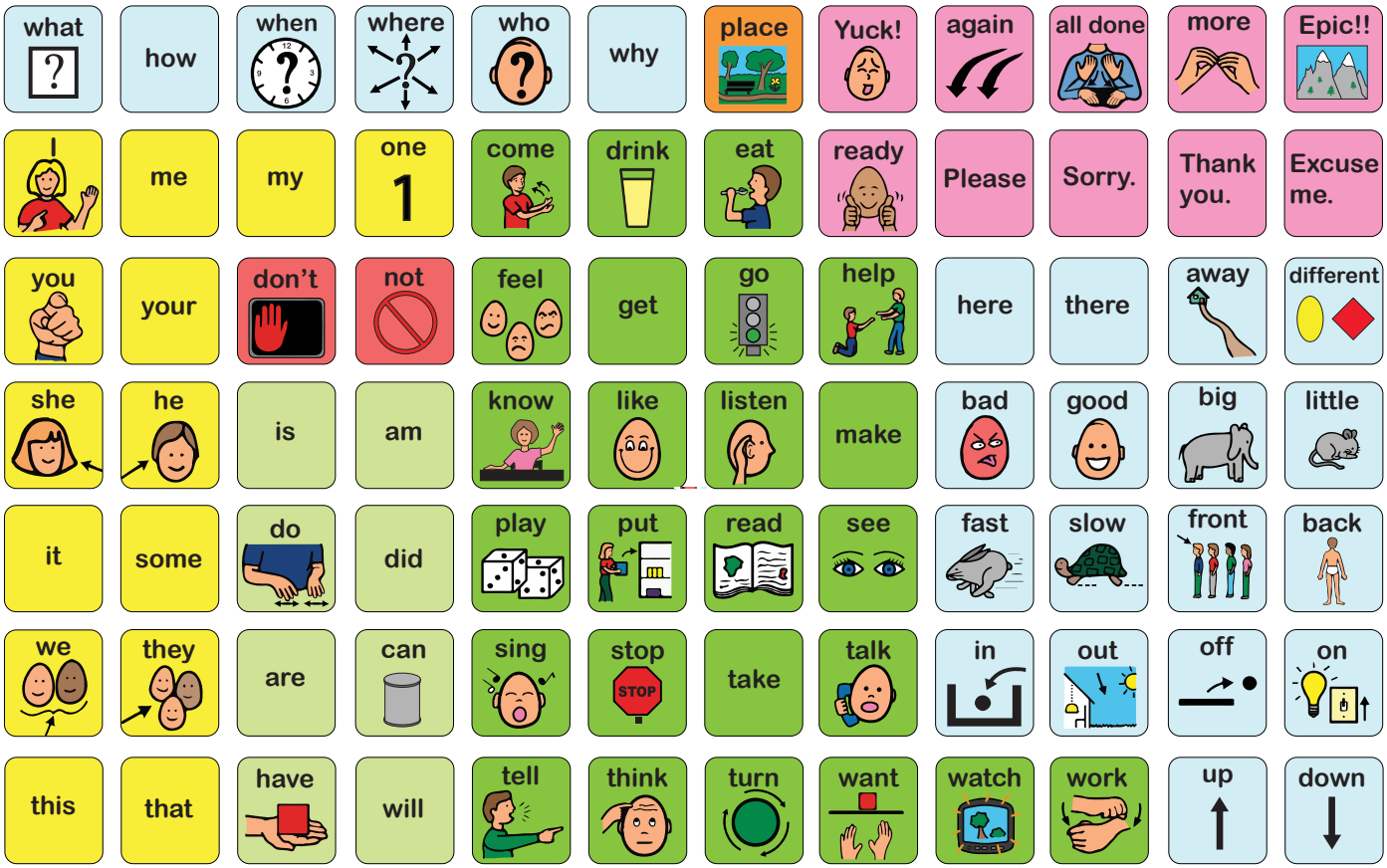
This growing understanding presents an opportunity to implement proactive strategies that strengthen student engagement, build social-emotional skills, and promote positive behavior in the classroom. This opportunity is relevant for the entire student population, including those receiving instruction in both general education and special education classrooms.

The start of the 3 authors' collaborative journey initially focused on developing the communicative abilities of AAC users within specialized instruction classrooms. After several years of rolling out AAC training for the district, we shifted to a broader approach focusing on social-emotional engagement based on UDL principles, developmentally aligned supports and strategies, and creating educator resources. Participation in the SEE-KS program (Social-Emotional Engagement-Knowledge and Skills) began this shift.

Though our initial focus as AAC-SLPs was developing students' communication abilities through AAC, it became readily apparent that a greater emphasis on student engagement in the classroom was needed not only to develop AAC abilities; but to also facilitate learning that supports student connection and well-being. Without student social-emotional engagement in the classroom, there is limited motivation to meaningfully communicate or interest to actively participate in learning.

With the input of many educators and other district staff, we developed district-wide resources and tools combining principles and insights gained along the way as needs arose. We now have a comprehensive set of district-wide resources that serve as guides for school-based educators of students receiving specialized instruction.

BACK TO CONTENTS



FCS AT Team - revised 7.30.2025

Image 1: FCS Core Word Board

This article highlights the meaningful changes that emerged from our focus on social-emotional engagement. We also offer insights for other districts related to both progress and challenges encountered targeting student engagement through social interaction, visual supports, and AAC strategies district-wide.

GRASSROOTS EFFORTS FOCUSING ON AAC

In 2012, our district's AT team and AAC-SLPs began targeting core vocabulary after attending one of the earliest trainings on core vocabulary and Language Acquisition through Motor Planning (LAMP. Center for AAC and Autism, 2025).

In these earlier years, we noticed students who used AAC exhibited challenges maintaining their communication abilities as they progressed through the school years. This was most readily apparent during transitions. Communication skills notably decreased or plateaued, especially as they transitioned to new environments — pictured words that had been available to them for years in one classroom often changed when they moved to the next.

To address this, the district's AAC-SLPs set out to develop one of the first systemwide core word boards. We aimed to provide staff and students with a standard AAC tool for early core word targets that would remain consistent throughout the district when students transitioned from grade to grade or school to school. (See Image 1: FCS Core Word Board above).

We soon developed formal core vocabulary training for educators providing specialized instruction and included evidence-based AAC implementation strategies. After several years, we noticed a recurring pattern as AAC implementation took hold and became consistent. Though more emphasis was placed on a standard set of core words district-wide, a focus on targeting a variety of pragmatic functions, and implementing the strategies of Aided Language Stimulation and modeling, we noted that many of our students made progress to a certain point with their communication abilities, then seemed to slow or plateau.

A different trajectory was noted when discrete academic concepts – such as letter recognition, counting, or labeling nouns – were targeted in lessons. Though students with limited verbal speech ability often showed progress for these concepts as per mastery of IEP goals, continued development of their communication abilities often slowed.

Despite good, consistent AAC intervention, communication development for many students was generally restricted to expressing basic wants and needs in very familiar or practiced activities. Overall initiation and spontaneous communication

using AAC for various pragmatic purposes continued to be limited. In addition, meaningful communicative expression of academic concepts as per mastered IEP goals also remained limited; these mastered concepts were only expressed in structured or predictable activities and infrequently, if at all, in spontaneous classroom communication.

After years of consistent AAC intervention, this trend was disheartening. However, upon reflection, we also identified a potential correlation between slowed communication development and overall student engagement within classrooms across the district.

We noted that classrooms that showed consistently higher levels of student engagement during instruction tended to have students that exhibited greater progression in communicative development, given appropriate and consistent AAC intervention. In these classrooms where students showed higher engagement, students' communication progression included varied word classes, different pragmatic functions, and an increase in initiating interactions.

At this time, our district was fortunate to collaborate with the GaDOE and Marcus Autism Center through a professional development grant to train educators in several Georgia districts. Using SEE-KS (Rubin, 2015) as a framework to support students' learning, the core goal was to build teacher capacity by maximizing their efforts to increase overall student engagement during instruction, rooted in Universal Design for Learning (UDL). The SEE-KS program (Rubin et al., 2022) builds on UDL principles, by incorporating UDL supports and strategies through a social-emotional lens in the classroom. The key to promoting increased student engagement is to proactively embed classroom supports and strategies that are aligned with students' exhibited level of social and communication development.

UNIVERSAL DESIGN FOR LEARNING THROUGH A SOCIAL-EMOTIONAL ENGAGEMENT LENS

CAST (2025) defines UDL as an approach that "aims to change the design of the environment ... When environments are intentionally designed to reduce barriers, every learner can engage in rigorous, meaningful learning." This mindset encourages educators to look beyond what a student can't do and instead consider how the environment can be designed to promote access, engagement, and growth for every learner. UDL focuses on proactive planning to remove barriers to learning for all students, rather than reactively responding to individual challenges in the classroom.

In the SEE-KS program, the principles of UDL remain the same but they are primarily focused on social-emotional engagement.

- **Foster Interest and Motivation:** Stimulating interest and motivation in different ways. The "Why" of learning.
- **Provide Multiple Means of Representation:** Providing information in different ways. The "What" of learning.
- **Allowing Multiple Means of Action and Expression:** Allowing students to demonstrate what they know in different ways. The "How" of Learning.

Because SEE-KS focuses on social-emotional engagement, its supports and strategies must be developmentally aligned. Social-emotional engagement looks different based on exhibited stage of communication development and, therefore, requires supports and strategies that match level of development.

SEE-KS specific UDL supports and strategies identify 3 characteristics that show a student is engaged in learning: **Investment, Independence, and Initiation.**

Educators will see students ***invested*** in the lesson when it taps into their interests and motivation. Investment is the "Why" of learning. Are students emotionally hooked in the lesson ensuring Investment (Interest) in the activity? Are there available strategies that support students' ability to persist?

Educators will see increased ***independence*** from their students since their understanding is supported within the lesson and they can then independently act. Independence is the "What" of learning. How can we increase student understanding to support Independence by providing information in multiple ways?

And lastly, educators will see students readily ***initiate*** and act within the lesson. Initiation is the "How" of learning. How can students show what they know? Are there multiple options of expression to foster participation and Initiation throughout the activity?

When a student shows all 3 characteristics, the "3 I's," during instruction, we now know when they are socially-emotionally engaged in the learning! Students are motivated to participate and understand what is taking place and what to do ... and then, they can initiate and communicate in the most effective way to show what they know.

Students who exhibit limited social-emotional engagement have limited opportunity and motivation to communicate. Opportunity and social motivation to participate are BOTH necessary for continued development of communication in the classroom. It became increasingly obvious that social-emotional engage-

BACK TO CONTENTS

ment, paired with consistent AAC intervention for those students receiving specialized instruction, must come together to facilitate meaningful learning and continued communication development in the classroom.

These experiences and observations through SEE-KS gave us a framework that we could apply and use with all students, regardless of developmental level or disability, to foster student engagement in any learning environment. With this knowledge in hand, educators can plan to proactively embed social-emotional supports and strategies within their lessons to boost student investment (interest), independence, and initiation to optimize learning for academic concepts, communication, and social connection.

DEVELOPING COMPREHENSIVE DISTRICT SUPPORTS

With new knowledge gained through SEE-KS, we shifted our focus slightly from primarily targeting AAC implementation, to a broader focus on overall student engagement using AAC methods. The learning environment is essential to supporting continued development of communication.

As our work evolved to include educator training on social-emotional engagement using UDL principles, it became clear that consistency across the district was essential to support sustainability and access for students at every school. Not every school or district program participated in formal SEE-KS professional development.

We began to ask ourselves, **"What resources and support do teachers need to foster their ability to maximize student engagement for learning?"** As SLPs focusing on AAC and communication, we knew that students must be engaged and motivated to have a reason to communicate. Upon reflection, we noted that the missing piece was an explicit focus on students' early social development abilities, starting with increased awareness of people, a reason to interact, and joint attention to develop communication abilities.

We also knew that educators were aware of the importance of visual supports, but noted implementation was generally inconsistent across classrooms, grades, and schools. We were also aware that a student's ability to use visual supports was highly dependent on their exhibited level of social and communication development.

Through collaborative reflection and input from a variety of district colleagues of varying disciplines, we developed several key resources for school-based educators. The goal was to maintain a consistent and comprehensive set of resources for educators to promote student engagement that also considers students' developmental levels.

Educator supports were developed for 4 key areas.

1. **Common developmental terminology** for both social development and communication development that can be used by district staff, school-based educators, and families.

2. **Developmentally based priority targets** outlining key social-communication goals, so embedded supports or lesson expectations appropriately correspond to students' level of development.
3. **A standard set of visual supports** grouped by purpose and developmentally aligned.
4. **A comprehensive guide to foster social-emotional engagement** through a lesson-planning form that guides educators to embed UDL supports to boost the "Three I's" of student engagement—Investment, Independence, and Initiation.

This intentionally developed set of comprehensive supports and resources for school-based staff and district trainers ensures that educators are supported, students are empowered, and student engagement for learning is maximized.

LESSONS LEARNED

While the comprehensive set of educator resources has endured over the years, conversation would not be complete, with noting only the high points and celebrating the successes. Along this incredible journey, we observed recurring challenges—patterns that shaped our growth and impacted sustainability.

Some challenges stemmed from shifts in priorities and resources, while others reflected the realities of implementing systemic change within a large organization. Maintaining momentum requires ongoing communication and a shared vision across schools and departments. The years of the COVID pandemic and its enduring characteristics were an added layer that amplified the impacts of noted challenges.

Among the most significant challenges encountered was the continual need to train new staff each year and proactively plan for staff turnover, ensuring that incoming educators understood and could implement the frameworks in place. Similarly, having dedicated district staff assigned to support these concepts

Engaging All Learners - Planning Guide to Maximize Interest & Investment, Understanding, and Expression

Identify Student's Communication Stage	Plan Daily Instruction Using UDL Guidelines	Implement Visual Supports and Strategies
Before Words Stage ...pre-symbolic; movement, actions, behavior	Provide multiple means of **Engagement** ... to ensure investment and interest	Appropriate for all students for each of the 5 Categories of visuals based on communication stage of development
Emerging Language Stage ...symbolic; generally, 1-2 word, picture, or gesture combinations	Provide multiple means of **Representation** ... for understanding to support independence	Available consistently and readily for all students to utilize and reference, when needed Individualized when necessary
Conversational Stage ...reciprocal interactions more effectively maintained & socially navigated	Provide multiple means of **Action & Expression** ... to facilitate participation and initiation	Developed visuals should support UDL Guidelines in lessons and within daily classroom routines

REMINDER: Keep in mind each student's social stage and social-emotional sensory regulation needs during lessons

Above: A high-level overview of steps taken during coaching and implementation sessions focused on "Engaging All Learners" through social interaction, visual supports, and AAC.

proved essential but was often limited by competing priorities and resource constraints.

Early on to get the program running quickly, it made sense to begin with a series of staff development sessions with classrooms at a few schools. As the number of classrooms and schools increased in successive years, organizing large-group coaching sessions became logistically difficult. The plan to build capacity and support growth through a peer-to-peer mentoring model at each school was also a challenge due to turnover and the increased time demands on educators.

As available resources changed and priorities evolved, our approach shifted. Large-scale group training and mentoring sessions gave way to a more flexible model based on educator request. Today, teachers and staff in our district may make a referral for coaching, implementation, or training, as needed for themselves or for their department.

Equally important was providing teachers the time for structured reflection and "downtime" to process their practice. This was especially important for teachers who operated frequently in "response mode" to meet the immediate needs of individual students.

Supporting teachers through these moments and helping them shift to a proactive, engagement-focused mindset requires school and district administrator support, intentional guidance, and consistent mentorship. Despite it all, each challenge offers opportunities for reflection and growth; reinforcing our collective commitment to fostering engagement, connection, and meaningful learning experiences for all students.

CONCLUSION

While noted challenges require ongoing attention and creative problem-solving, they also emphasize the value of intentional structures, consistent support, and a collaborative culture in sustaining meaningful change. By acknowledging and addressing these areas, our district has refined practices, while maintaining a focus on student growth in communication and social-emotional development.

Though our district was fortunate to participate in initial

BACK TO CONTENTS

training with Emily Rubin, MS, CCC-SLP, SEE-KS co-author, one of the most empowering characteristics of SEE-KS is that its tools and resources remain available at no cost for school districts. The SEE-KS framework is based on UDL principles applied through the lens of social-emotional engagement. The only other knowledge needed is that embedded supports and strategies and priority targets for each student must align with the student's exhibited level of development. Since that time, our efforts have focused on nurturing student engagement in the classroom, which further enhances our ability to facilitate social-communication development through AAC.

As we continue to address various challenges, we remain steadfast in supporting social-emotional engagement for learning across all classrooms in the most effective and meaningful ways. Even though we started this path focusing on student engagement over 10 years ago, the principles of SEE-KS and the educator resources developed have stood the test of time. There is genuine hope for all districts to adopt a developmental model of intervention grounded in neuroscience, using a UDL approach that emphasizes social-emotional engagement.

No educator walks this journey alone. Each day, in classrooms filled with curiosity and effort, the smiles we encounter, the joy we witness, and the progress we celebrate remind us of why this work matters.

And now that one of the authors has moved on to another work setting, the need to facilitate social-emotional engagement across all environments outside the school building is readily apparent; in daycares and preschools, adult group homes, assisted living facilities, senior centers, and even at work. Though formal learning and education ends after graduation, the basic desire to remain connected and engaged within the greater community continues, regardless of developmental level or disability.

The seeds of growth through engagement, communication, and connection extend beyond graduation into our wider communities. In every moment, we see that our efforts can truly make a difference. Together, we can all inspire meaningful change that lasts a lifetime.

DISTRICT-WIDE SUPPORTS FOR EDUCATORS

The supports and resources highlighted in this article are described in greater detail to clarify the key components of each resource. The content of each resource allows teachers to intentionally design lessons and embed developmentally appropriate supports that meet the needs of both groups and individual students during instruction.

The resources created include:

a. **Social-Communication Stages Graphic.** To establish common developmental terminology across the district. A visual graphic was created to promote a shared language

Image 2: Social Communication Stages of Development

across the district. This graphic depicts **three social stages**—*Social Orienting, Seeking-Liking, and Social Maintaining*—along the top, and three **communication stages**—*Before Words, Emerging Language, and Conversational*—along the bottom. Identifying a child's specific stage in both domains is essential to ensure that embedded supports are developmentally appropriate.

The developed graphic shows that social skills and communication skills do not develop in isolation of each other; but rather, they typically develop in tandem.

In students with developmental differences, one domain may advance more quickly than the other, creating a developmental gap. In this case, the domain that advances more quickly eventually plateaus, if the gap in the other domain is not addressed. For example, autistic students who use AAC may exhibit a plateau in communication development due to social learning differences. When the gap in social development is intentionally addressed as a priority and social development catches up, communication development can again progress more effectively with appropriate AAC intervention.

The Social-Communication Development graphic not only identifies and defines common terminology across the district for development; it also serves as a visual support to assist teachers in identifying possible gaps in social or communication development exhibited by students. It has also proved helpful for families when describing their child's current abilities and discussing potential priority goals that correspond to their child's observed level of development. (See Image 2: Social Communication Stages of Development)).

b. **Scaffolded Supports for Communication Development: Priorities & Goals**. To provide guidance for embedding UDL supports that are developmentally appropriate. It also details priorities and goals that, when mastered, signal a student is progressing towards the next stage of communication development.

With information from a 2015 presentation (May, 2015) by Emily Rubin, MS, CCC-SLP, we developed this resource to serve as a reference for educators. It defines the communication char-

BACK TO CONTENTS

Scaffolding Supports for Classroom Instruction and Curriculum

Identifying the developmental stage of students can guide priorities and scaffolding of instruction and curriculum to increase student engagement in the classroom.

Embedding developmentally appropriate supports can foster student engagement in 3 areas:

3 I's of Student Engagement: Investment (or Interest), **I**ndependence and **I**nitiation.

Developmental Stages:

PRE-SYMBOLIC/BEFORE WORDS STAGE – Students at this stage are not talking or using symbols to communicate.

- Priority at this Stage: Build a high rate of nonverbal communication (e.g., conventional gestures that have shared meaning such as: giving, pointing, pushing away, gesturing)
- Goal: Initiate 2 communications per minute during highly motivating situations
- **How this relates to AAC:* Because we target student engagement with people (e.g., a child's bid for social interaction) at this stage, we primarily focus on modeling for comprehension of single words. The priority is single word meaning and includes: people's names, actions, prepositions. For comprehension, students may more readily understand real objects paired with directions or presented content.

EMERGING LANGUAGE STAGE – Students at this stage are early communicators and are using single words or symbols. They are learning how to combine words flexibly to communicate.

- Priority at this Stage: Increase communication involving others (e.g., requesting actions or routines, commenting on experiences with teachers, friends, family)
- Goal: Build subject + verb combinations (e.g., Harper open cookies. Jamie's turn)
- **How this relates to AAC:* The priority goal is to develop flexible language to ultimately include subject + verb + object/descriptor combinations. For comprehension, students will benefit from visual supports for content and for s+v+obj/descr word combinations.

CONVERSATIONAL STAGE – Students at this stage have developed motivation to socially interact with others and readily attempt to maintain reciprocal conversations. They can form word combinations flexibly to communicate a variety of thoughts.

- Priority at this Stage: Build a sense of self-efficacy and target social norms in conversation (e.g., self-regulation abilities, executive functioning skills, reciprocal turn taking, vocal volume, proximity, topic selection, and topic maintenance etc.)
- Goal: Build the student's awareness of social expectations and ability to predict intentions of others.
- **How this relates to AAC:* The priority goal is to develop awareness of social norms and foster appropriate interactions and emotional regulation skills. Visual supports can be provided to facilitate ability and independence to self-regulate and navigate social interactions. This increases a student's ability to feel effective as an active participant and communicator within the environment.

Rubin, Emily (2017, March). Navigating evidence-based practices for children with autism: Application of the SCERTS framework for selecting critical educational objectives. Go SSLP Conference, Atlanta, GA.

Developed by Forsyth County Schools AT Team; 8.26.2017

Image 3: Scaffolding Supports by Stages of Communication

BACK TO CONTENTS

Forsyth County Schools
Categories of Visual Supports
Tier 1 & Tier 2, Proactive Classroom-Based Tools

1. **COMMUNICATION: Communication Tools/Systems and Language Supports**
   (ex. Core Word Board, Phrase Strips, Voice Output Devices)
   - Tools to support expressive communication; low-tech to high-tech
   - Tools and supports to foster and enhance comprehension of language; low-tech to high tech
   - *Long Term Goal - Every student will establish a proficient communication system and utilize supports to foster comprehension of language.

2. **EXPECTATIONS: Behavior Management System**
   (ex. Classroom Rules, Behavior Expectations, Classroom-Based Jobs/Roles)
   - Promotes independence for self-management of expected behavior
   - Minimizes frequency of verbal reminders from teachers
   - *Long Term Goal - Every student can monitor his or her own behavior and establish positive self-confidence/efficacy.

3. **DAILY ROUTINES AND TRANSITIONS: Schedules**
   (ex. Individual Schedules, Classroom-Based Schedules, Within-Task Schedules)
   - Regulation tool for visualizing time and understanding expectations
   - Provides predictability
   - Reduces behaviors
   - *Long Term Goal – The student will develop the ability to use a tool to visualize their schedule. This fosters ability to visually plan time and facilitates independence in his or her current class, future class placements, in settings outside school, and eventually at work or in the community.

4. **VISUAL SUPPORTS DURING INSTRUCTION: Supports for Comprehension of Language and Content**
   (ex. Real Objects, Phrase Strips, Aided Language Input, Help Boxes, Graphic Organizers, Word Walls, Content Visuals)
   - Supports comprehension of language and presented concepts
   - Promotes independence during instruction
   - Scaffolds instruction for different learners who may also be at different developmental stages
   - *Long Term Goal - The student will build comprehension of language and knowledge of presented instructional content or academic concepts. The student will exhibit knowledge and independence for use of available visual supports during daily activities.

5. **SOCIAL-EMOTIONAL REGULATION: Supports for Managing Emotions and Self-Regulation**
   (ex. Turn-Taking Supports, Emotional Regulation Support Choices, Visual Timers)
   - Provides predictability
   - Fosters engagement through anticipation
   - Increases social orientation towards people
   - Promotes appropriate social interaction and social regulation skills
   - *Long Term Goal – The student will learn coping strategies related to time management, social-emotional regulation, and awareness of themselves and others within social interactions.

Developed by Forsyth County Schools AT Team; 8.26.2017

Image 4: Five Categories of Visual Supports

BACK TO CONTENTS

acteristics at each of the 3 communication stages, priorities for students in this stage, and an overall communication goal at each stage. We then related how this information corresponds to AAC implementation. (See Image 3: Scaffolding Supports by Stages of Communication).

c. **5 Categories of Visual Supports**. To identify a standard, comprehensive set of visual supports, grouped by purpose; that are ideally present in every classroom to maximize overall student engagement.

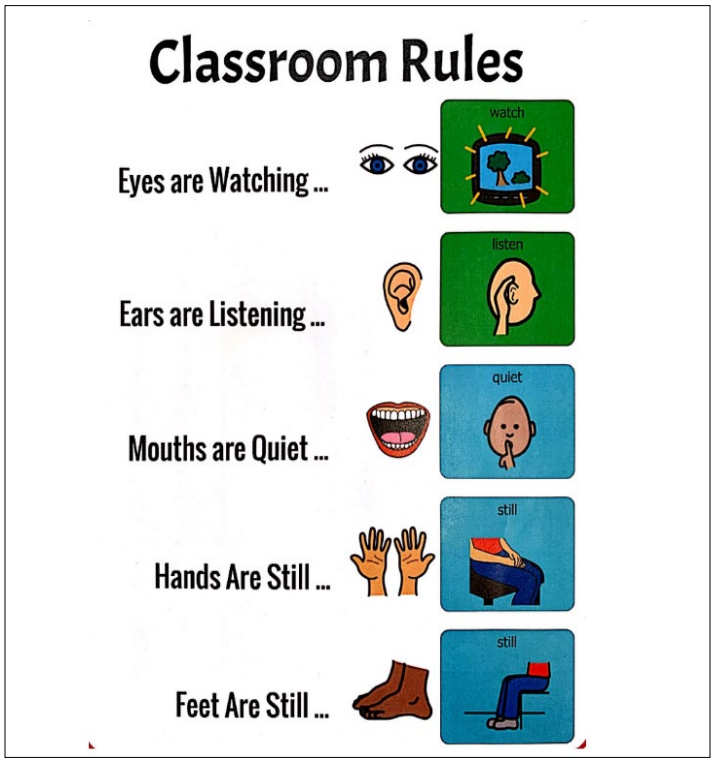
A team comprised of a behavior specialist, an AAC-SLP, and an instructional coach reviewed the variety of visual supports that were utilized throughout the district. The team identified 5 categories of visual supports grouped by the "purpose" served.

This resource document details "why" each category of visual support enhances student engagement and should be standard in the classroom. It additionally describes the skills that students develop through consistent use of each type of visual support.

Once the categories were identified, it became clear that individual classrooms and their students benefited from utilizing supports across all 5 categories, universally in the classroom.

To support educators at all schools, district Special Education staff developed a "Visual Supports Binder" that contains 2-3 examples of select visual supports within each of the five categories. Special Education staff took it a step further and created each visual support example in 3 different versions, each version designed to match one of the 3 communication stages.

For example, the category of EXPECTATIONS carries several types of visual supports to assist students in following expectations. The visual supports example for "classroom rules" in this category was created 3 times; one appropriate for a student at the Before Words stage, another for a student at the Emerging Language stage, and the last for a student at the Conversational stage.



Example: Classroom Rules Emerging Language

Because our district had been implementing and training on its low-tech core word board (CWB) systemwide for several years prior, the CWB served not only as the primary visual support for the COMMUNICATION category, but elements of it were also utilized in the other visuals highlighted in the binder. (See Example: Classroom Rules Emerging Languagee)

After weeks of printing, cutting, and laminating, a hard copy of the Visual Supports Binder is now housed in each school in our district so that educators can look through, touch, and get ideas of the most optimal visual supports for the classroom. Also accessible online for all staff, the Visual Supports Binder serves as a teaching tool to show how one visual support can be slightly modified for each stage of communication development. (See Image 4: Five Categories of Visual Supports).

d. **UDL Lesson Planning Form to foster engagement.** To provide structured, comprehensive guidance for teachers to purposefully embed visual supports when planning lessons.

Teachers now have ready access to this tool that guides them through questions to proactively embed UDL supports and strategies. Tips and reminders were included directly on the resource to maintain awareness of developmentally appropriate supports for communication development and priorities for social development. (See Image 5: FCS Lesson Planning Form)

REFERENCE

CAST. (2025). CAST: Until learning has no limits. https://www.cast.org

Chevallier, C., Kohls, G., Troiani, V., Brodkin, E. S., & Schultz, R. T. (2012). The *social motivation theory of autism*. Trends in Cognitive Sciences, 16(4), 231–239. https://doi.org/10.1016/j.tics.2012.02.007 (ouci.dntb.gov.ua)

Prizant, B., Wetherby, A., Rubin, E., Laurent, A., & Rydell, P. (2006). The SCERTS *Model: A Comprehensive Educational Approach for Children with Autism*. Baltimore, MD: Paul H. Brookes Publishing.

Rubin, Emily. Communication Crossroads. (2025). *SEE-KS*. https://commxroads.com/see-ks/

Rubin, Emily (2017, March). *Navigating evidence-based practices for children with autism: Application of the SCERTS framework for selecting critical educational objectives.* GOSSLP Conference, Atlanta, GA.

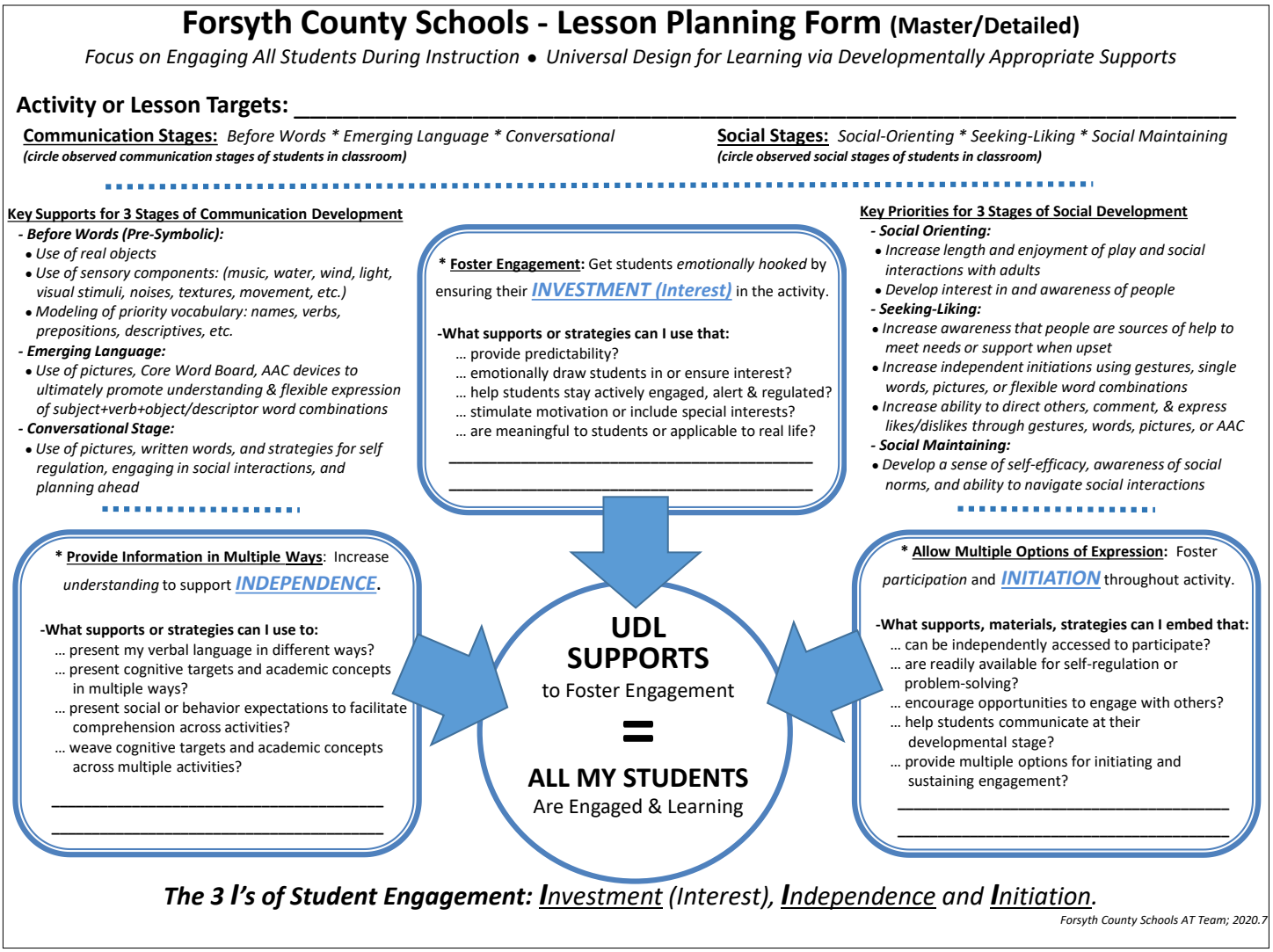


Image 5: FCS Lesson Planning Form

Rubin, Emily (2015, May). *Social Emotional Engagement – Knowledge & Skills, Measuring Progress and Planning Next Steps.* [Web-based presentation]. GaDOE State Professional Development Grant, Preschool Programs, various LEAs.

Rubin, E., & Townsend, J. (2022). *Social emotional engagement: Finding the fuel for learning in our classrooms* (Using the freely accessible tools of SEE-KS) [Paper presentation]. OCALICON, Columbus, OH, United States.

Siller, M., Morgan, L., Fuhrmeister, S., Wedderburn, Q., Schirmer, B., Chatson, E., & Gillespie, S. (2023). *Feasibility and acceptability of a low-resource-intensive, transdiagnostic intervention for children with social-communication challenges in early childhood education settings.* Autism, 28(3), 587-599. https://doi.org/10.1177/13623613231179289 (Original work published 2024)

ADDITIONAL INFORMATION AND RESOURCES RELATED TO SEE-KS:

SEE-KS Social Engagement Ladder
https://cxrweb.wordpress.com/see-ks-social-engagement-ladder-whole-group/

SEE-KS Quick Reference Tool
https://cxrweb.wordpress.com/see-ks-quick-reference/

SEE-KS 6 Step Mentorship
https://cxrweb.wordpress.com/see-ks-mentorship-form/

Language as a Missing Link on the Deal Center website:
https://www.galiteracycenter.org/language-as-a-missing-link

All images and this article are copyrighted by FCS Assistive Technology Team ■

BACK TO CONTENTS