

The Three Definitions of Application for AAC Intervention

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Abstract

This article will address an important issue related to speech-generating devices (SGDs) and augmentative and alternative communication (AAC) software applications (apps) in relation to the widespread adoption of mobile devices. This article will explore each of the three definitions of application including (a) a software application, (b) putting something into practice or operation, and (c) sustained effort. We hope that these three “app” definitions and discussion of our use of the Student, Environments, Tasks, and Tools (SETT) Framework can be a quick, easy, and memorable way to convey to families, therapists, and teachers that tools are made powerful when they are combined with good teaching and processes that sustain the use of AAC. A review of The Centers for Medicare and Medicaid Services updated 2015 National Coverage Decision for SGDs will be included, highlighting the major change to this updated coverage which includes the expansion of the definition of speech.

The purpose of this paper is to address an important issue related to speech-generating devices (SGDs) and augmentative and alternative communication (AAC) software applications (apps) in light of the sweeping changes that have occurred in wake of the widespread adoption of mobile devices. We need more than AAC apps, but instead comprehensive AAC interventions. So while Light and McNaughton (2013) identified important potential benefits of the combination of new mobile devices used with AAC apps, they also cautioned that we must focus on communication, not just on the technology. Holistically considering the needs of people with complex communication needs (CCN) through the lens of the Participation Model (Beukelman & Mirenda, 2013), we recognize the potential for people with CCN to experience fundamental access and opportunity barriers to participation if AAC systems and supports are not obtained. The fundamental role of the circle of communication partners that can support an individual with CCN is to break down these access and opportunity barriers. We would like to introduce three “app” definitions and hope they can be a quick, easy, and memorable way to convey to families, therapists, and teachers that tools are made powerful when they are combined with good teaching and processes that sustain the use of AAC.

The word app has three important definitions. These three definitions are relevant to individuals with CCN who use AAC and the people in their lives that support them in their language and communication development. The first definition is one that parts of the AAC community are focused on currently, defining *application* as “computing a program or piece of software designed and written to fulfill a particular purpose of the user” (Application [Def. 1], 2010; See Figure 1). Augmentative and alternative communication apps have become popular tools for supporting communication. However, just as having an AAC system may be necessary, but it is far from sufficient for closing the participation barriers we are focused on in the field of AAC. We also need AAC intervention. Recently, some of our research group experienced yet again the concern of finding a child’s SGD in the closet, battery dead, and abandoned, underlining this point. This leads us to the important second definition of *application*, “the action of putting something into practice or operation” (Application [Def. 2], 2010; See Figure 2). Putting AAC systems into application often requires motivating a range of communication partners to action, all set in a complex system. Developing communicative competence, including the process of language acquisition through AAC, takes yet a third definition of *application*, “sustained effort; hard work” (Application [Def. 3], 2010; See Figure 3). This article will explore each of the three definitions of application.

Figure 1. Application Definition 1.

application |.apliˈkæʃən|
noun
1 Computing a program or piece of software designed and written to fulfill a particular purpose of the user: a database application.

Why Do We Need SGDs and AAC Apps?

The task of being able to connect with other people through communication is a fundamental human right (Brady et al., 2016) that empowers us with the ability to share thoughts, dreams, and desires with those that we care about. Along with helping us connect and experience social closeness, communication allows us to express important information, make our wants and needs apparent, participate in social etiquette routines, and partake in an internal dialogue with oneself (Beukelman & Mirenda, 2013; Light, 1988). To that same goal, the National Coverage Determination (NCD) for Speech Generating Devices (Centers for Medicare and Medicaid Services, 2001) states, “Speech generating devices are defined as speech aids that provide an individual who has a severe speech impairment with the ability to meet his [or her] functional speaking needs” (Centers for Medicare and Medicaid Services, 2001, “Definition of Speech Generating Devices”). Speech-generating devices are AAC tools that serve to help what Porter (2007) articulated as the goal of AAC as something that gives people the ability to meet their important and socially valued daily language needs as specifically, intelligibly, efficiently, and independently as possible.

We know that there are up to 4 million Americans with CCN who require AAC (Beukelman & Mirenda, 2013). This diverse population of people with CCN varies on many dimensions such as age, ethnicity, socioeconomic status, language spoken in the home, language and literacy skills, physical ability, cognitive function, vision, hearing, and beyond. In reflection upon the children, teenagers, and adults we serve who have complex communication needs, we desire these individuals to develop a way to communicate and gain competence across social, linguistic, operational, and strategic domains (Light, 1989).

As Light and McNaughton (2014) pointed out, the field of AAC has demonstrated what is possible when people with CCN harness the power and potential of AAC. We must now make that potential the probable, meaning that people get the environmental and technological supports

they need to avoid opportunity and access barriers. One important facet of making the potential the probable is the successful use of SGDs.

Augmentative and alternative communication tools take many forms from low-tech to high-tech (Sennott & Bowker, 2009). In this discussion of SGDs, which often take the form of traditional computing devices and new mobile devices like the iPad, we want to make it clear that the AAC tools that meet the needs of individual communicators are what is important. The “multiple communication modes” Williams (2004) spoke about come in all shapes and sizes. Augmentative and alternative communication tools serve important functions and can take many forms.

How Do We Obtain SGDs?

In the United States, there are two ways an individual can obtain a SGD. One option is to use an app store to purchase an app and various retailers that sell off-the-shelf computer hardware. Alternatively, through health insurance, one can purchase an SGD through a Medicare-approved supplier. Regardless of how devices and software are obtained, an assessment is necessary in order to assess what elements of the AAC system will be the most appropriate for the individual’s needs. As McBride (2011) stated, “the clinician needs to ensure the use of sound AAC evaluation principles and procedures and prioritize the individual needs of the communicator” (p. 9). Unfortunately, too often assessment is skipped when software is so readily accessible (Caron, 2015; Gosnell, Costello, & Shane, 2011).

App Store Route

Apps can be bought virtually through an app store. When buying an AAC application to turn your mobile device into a speech-generating device, one can search the app store, find the applicable application, and then download. You have quickly turned a simple tablet computer into a powerful SGD.

Health Insurance Route

The purchasing of a traditional SGD is a different process, typically involving health insurance funding and the purchasing of devices through a Medicare supplier. This process entails:

1. An assessment with a speech-language pathologist (SLP) in order to assess what device will be the most appropriate for the individual’s needs.
2. The SLP will need to then create a report for the purposes of justifying the individual acquiring an SGD. The physician then writes a prescription and completes any necessary paperwork. The SLP will then contact the local sales representative of the company of the particular device chosen.
3. The individual’s eligibility of different paying sources is assessed. This can include Medicaid, Medicare, or other health insurance.
4. A funding submission packet is provided to the device company.
5. The company submits the funding request and ensures to bill the applicable entity. The company then fulfills the device order.

As you can see, this path to acquiring a device does take some steps, however, qualified SLPs and SGD companies are able to support individuals and families through the process.

Coverage Update

On July 29, 2015, the Centers for Medicare and Medicaid Services updated the NCD for SGDs. The 2015 NCD for SGDs (NCD, 2015) restores the full scope of Medicare SGD coverage through the aspects of devices and their capabilities and features. The 2015 NCD is a tremendous update from the 2014 NCD, where no computer-based devices were covered and devices were to

only support face-to-face communication (Golinker & Bardach, 2015). In addition, unlocking was prohibited and devices were to never be unlocked.

The 2015 NCD ensures that all SGDs used by a patient with severe speech impairments and for the generation of speech are covered. In addition, devices are limited to speech features when delivered. A major change to this updated coverage includes the expansion of the definition of speech. Previously, speech was merely considered to be the face-to-face communication between individuals. Now it is expanded to include communication by text, email, and phone in addition to face-to-face communication. This differentiation from face-to-face communication takes into account the power that technologically enhanced communication has in daily life. Non-face-to-face communication helps us to connect with other individuals, helps us to feel typical, makes communication easier, and helps us to gain independence and help (Caron & Light, 2015). Features that are not included upon delivery include: environmental control, general internet access, various computer features, and video communication features. Yet, devices can have additional capabilities and features. These can be accessed through the use of a Medicare form called an *Advanced Beneficiary Notice* (ABN). This form substitutes what used to be called unlocking and upgrades on a device.

In addition to the updates to the 2015 NCD, effective January 1, 2016, is the Steve Gleason Act, which is governed by the 2015 NCD. The Steve Gleason Act puts an end to capped rentals. Speech-generating devices will become the beneficiary's property upon delivery. Further, this act enhances the definition of durable medical equipment to add eye-tracking accessories to the definition.

In conclusion, the 2015 NCD restores the scope of Medicare SGD coverage that existed between 2001 and 2013 and makes it easier for clients to access SGDs for non-face-to-face communication features and add non-communication features. In addition, the Gleason Act eliminated capped rentals. These updates in coverage will provide individuals with the opportunity to receive the SGDs that they need and serve as a solid model for other entities to emulate. As professionals who work with individuals that require the use of AAC and assistive technology, it is imperative to understand the intricacies of Medicare coverage in order to best advocate and serve. The 2015 NCD re-opens the doors for an individual with CCNs to receive the equipment and software necessary to communicate across various contexts in his or her life.

Figure 2. Application Definition 2.

application |,apli'kāSHən|

noun

2 the action of putting something into operation: *the application of speech therapy*

improved her speech.

The action of putting an AAC system such as a SGD into practice starts with planning. When we compare and evaluate the steps that are involved with obtaining an AAC app for a new mobile device from an app store to the fairly intensive process of working through health insurance, it is fairly easy to see why families and other stakeholders are circumventing the traditional process. We value the AAC assessment process and the risks of missing out on careful consideration (Gosnell et al., 2011), however, we believe families should be encouraged to take the important step of obtaining a tool that can help their loved one. Yet, hopefully, families can hear the message that although the app is important, putting it into action and creating sustained effort and hard work is vital to the development of communicative competence (Light & McNaughton, 2015). The science and art of helping teams put AAC into practice has been the focus of AAC text books (Beukelman & Mirenda, 2013), large home- and school-based research studies (Ronski &

Sevcik, 1996), informative websites such as the [“PrAACtical AAC” blog](#) and the Penn State developed [“Early Intervention for young children with autism, cerebral palsy, Down syndrome, and other disabilities” website](#).

Additionally, our research group won a series of pilot grants to fund community partnership work in the area of AAC intervention. In preparation for the project, we began exploring what frameworks people are using for considering AAC intervention. With some of us coming from an academic background, we favored the comprehensive Participation Model (Beukelman & Mirenda, 2013). Yet, in listening to practicing clinicians, we knew that a simpler model called the Student, Environments, Tasks, and Tools (SETT) Framework (Zabala, 1995) is incredibly popular. Once we chose the SETT Framework as a key piece of our intervention model, it led to the incorporation of a number of other key elements including SMART goal planning, Kanban, strategy instruction, and coaching (Bovend'Eerd, Botell, & Wade, 2009; Schut & Stam, 1994). We would like to share about some of these elements to help you with “the action of putting AAC into operation.”

SETT Framework

Our current line of research has used the SETT Framework as a foundational element in operationalizing our intervention approach to serving individuals with CCN towards the goal of full participation and inclusion. The SETT Framework created by Joy Zabala (1995) is a collaborative approach to intervention where the Student, Environments, Tasks, and Tools are considered in a dynamic and cyclical fashion with the goal being to successfully obtain self-determined and meaningful goals. A number of short articles about the SETT Framework can be retrieved from [Zabala’s website](#).

We believe that the SETT Framework is most useful when it is thought of as a dynamic and cyclical tool for considering need. Yet, unfortunately, all too often the SETT Framework is reduced to a simple feature-matching tool for initial assessment purposes. Zabala and colleagues have tried to underline that the SETT can be used dynamically over time with a paper that coined the phrase SETT and ReSETT (Zabala, Bowser, & Korsten, 2004).

In our use of the framework, we began with a meeting of the key stakeholders that included the individual being served (Student), family members, and professionals. For some young individuals with CCN, it was their first time attending a meeting of this sort. Allotting plenty of time for this initial discovery meeting was important. We prefer using a whiteboard or chart paper to quickly compile notes collaboratively with the group. You can simply write the headers: Student, Environment, Tasks, and Tools. Also, using sticky notes can help more people participate. The goal of the meeting was to come away with actionable objectives and complete what we called an implementation plan that included operationalized goals and a list of key elements for the intervention. We designed the plans to be worked on dynamically over time to guide intervention and help provide benchmarks to monitor progress.

Student

The student is the focus of the process and is used across age ranges, in the spirit that we are all lifelong learners (Zabala, personal communication, May 1, 2015). Additionally, the student is listed first in the framework in order to promote putting the student first and not getting overly focused on tools. The essential questions asked in this section are, (1) What does the student need to do? (2) What are the student’s current abilities? (3) What are the student’s current special needs? Any relevant student information can be pulled into this consideration area including school records, Individualized Education Program (IEP) documents, other assessments, and anecdotal notes from the team. Augmentative-and-alternative-communication-specific consideration models and tools may be useful such as the Participation Model (Beukelman & Mirenda, 2013), The Communication Supports Inventory-Children and Youth (CSI-CY; for a link, see Rowland, Fried-Oken, & Steiner, 2009), and others listed at PrAACtical AAC’s [blog post on assessment forms](#). In our use of this part of the framework, we also like to include a focus on

student preferences and the qualities the team sees in the student. We find that this form of preference assessment assists with exploring meaningful contexts for intervention.

Environments

We must consider the many environments in which the student participates in throughout his or her typical day. Environments have various communication contexts, communication partners, overall supports, materials, equipment, and physical access issues.

Varying Communication Contexts

It is important to remember that a certain AAC system that works in one environment may not provide the necessary communicative supports in another (Blackstone, Williams, & Wilkins, 2007).

No one communication mode, no AAC device, no low-tech board, no gestures, signs, or speech could possibly meet all my communication needs all of the time. I use multiple communication modes. I communicate in many ways. I select the best mode depending on the location, with whom I am communicating, and the purpose and content of the communication ... I suggest that everyone needs more than one way to communicate. We all need access to multiple communication modes to be able to say everything we need and want to say, whenever and wherever we happen to be, and to whomever we choose. (Williams, 2004)

Communication Partners

In addition to ensuring that the AAC systems chosen are applicable to varying environmental contexts, it is important that the work of the communication partner is not overlooked. Coaching communication partners is important to the success of AAC interventions (Sennott, Light, & McNaughton, 2016; Sennott & Mason, 2015) and communication partner instruction has been comprehensively reviewed in a recent meta-analysis by Kent-Walsh, Murza, Malani, & Binger (2015). Strategy instruction that involves the use of a coaching approach can help communication partners learn important AAC intervention principles and practices.

Tasks

This component of the SETT Framework involves operationally defining what the individual using AAC needs to do. One way to clarify this process of goal setting is to use our adaptation of the SMART approach (specific, measurable, agreed upon, realistic, and time based; Bovend'Eerd, Botell, & Wade, 2009; Schut & Stam, 1994). See Table 1.

Table 1. SMART Goal Setting Approach.

SMART Element	Explanation
Specific	The goal is operationally defined.
Measurable	You can take meaningful data on the goal.
Agreed upon	The team values the goal and commits to it.
Realistic	The goal is reachable and developmentally appropriate.
Time based	The goal has a clearly defined due dates and benchmarks.

Various resources exist for helping teams carefully consider the content of “tasks” or goals. Zabala and colleagues (2004) shared about using Light’s (1989) communicative competencies as a way to help teams focus conversations about various elements of specific tasks. Tools like the CSI-CY (Rowland et al., 2009) also may be useful for operationalizing tasks for goals around AAC intervention.

Tools

The intention behind the SETT Framework is that when the student, environment, and tasks are carefully considered, both choosing tools and how to begin using the tools are made

apparent. Much work has been done on the process of feature matching the user's unique needs with tools to support those needs. See Gosnell et al. (2011) for a beneficial discussion of AAC feature matching.

Yet, the overlapping nature of the framework leads us back to questions about whether or not the communication partners in the environment need additional training in how to use the tools and put them into operation. One exciting area of development is the expanded research in the areas of online learning and eLearning in AAC (Douglas, McNaughton, & Light, 2013; Sennott, 2013). A recent example of this expansion is the free 29-part [Communication Training Series](#) shared by the Angelman Syndrome Foundation that includes such topics as "From Goals to Growth: The Essential Elements Of An AAC System," "Aided Language Stimulation – Make It Interactive and FUN!," and "Communication: Connecting to the Curriculum."

Operational competence aspects for incorporating AAC tools are also very important. Ownership and troubleshooting aspects also must be considered. At one point or another we have all had to deal with technology that fails to work, or that has even been stolen. It is useful to consider what happens when technology inevitably malfunctions or theft leaves an individual unable to communicate. When choosing a device, it is important to keep in mind that accidents do happen. This calls to mind a recent event in an early childhood setting where a full glass of milk was spilled directly onto an SGD. Fortunately for this individual, the iPad was enclosed in a waterproof case. The student simply got some paper towels and cleaned it off.

Figure 3. Application Definition 3.

application |,apli' kāSHən|

noun

3 sustained effort; hard work: *the job takes a great deal of patience and application.*

Augmentative and alternative communication assessment and intervention is a dynamic process that unfolds over time. We recognized the limitations of the first definition of application, a software tool, an SGD, and that the second definition of putting that tool into operation is what makes it powerful. With this third definition, we realize how a truly competent communicator is developed. Application as sustained effort to helping children, adolescents, and adults leverage the power of AAC systems is an important aspect of AAC intervention. Generalization can be designed, but takes collaboration and careful consideration of how the environment interacts with the skills being supported over time. The need for an increased focus on the full range of communication goals, in real-world contexts, and on long-term outcomes is crucial (Light & McNaughton, 2015). In our community partnership work this year, it became clear that two relatively simple but important points are useful for sustained effort in the area of AAC intervention including: (a) identifying and supporting a "point" person, (b) creating a system for organizing team communication, actions, and resources. Future research is needed to explore the impact of these factors.

Conclusion

It is important that we consider the implications of the responsibility we hold as SLPs, educators, and advocates for people with CCN in their pursuit of removing barriers to communication and realizing the opportunities that communicative competence brings. We are privileged to possess the expertise in order to provide individuals with the mix of support and tools to self-determine and participate more fully in his or her daily life. Knowing what AAC supports would best support "students" can be a series of potentially difficult decisions that many professionals

face. The three application definitions can be a reminder to push one another back to the focus on the people who use AAC.

In conclusion, we are reminded of the words of David Chapple, a software engineer and person who uses AAC, who stated,

Despite the doubts by many people, I have reached my lifelong dream of finding full-time employment. Although I had the knowledge to become a software engineer, the Liberator [a type of SGD] gave me the opportunity to demonstrate that knowledge and to express my personality so I could reach my dream. A Voice Output Communication Aid (VOCA) is just an incredible tool that enables people to achieve their dreams. Without those people, a VOCA would be nothing... We should always remember: AAC doesn't make successful people; people make AAC successful. (Chapple, 2000, p. 160)

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