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The C.L.A.P. methodology: Utilizing assistive technology in the general education classroom

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THE C.L.A.P. METHODOLOGY: UTILIZING ASSISTIVE TECHNOLOGY IN THE

GENERAL EDUCATION CLASSROOM

By

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The C.L.A.P. Methodology: Utilizing Assistive Technology in the General Education Classroom

By
Lillia Sheline
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1 | Introduction

As the technological boom that began in the nineteenth century continues to grow at an enormous rate, the opportunities for individuals with all types of disabilities to use assistive technology in their neurotypical and able-bodied-centered classrooms has grown parallelly. More than ever before, we have widespread technologies available to assist people with various disabilities in finding success academically, physically, personally, and more. These technologies include a multitude of speech-to-text devices that assist with fine-motor disabilities, text-to-speech devices that assist with verbal disabilities, enhanced classroom tools to assist with any variety of disabilities or challenges, and so much more.

Each of these technologies falls under the category of "Assistive Technology", or AT, which is "any item or piece of equipment that is used to increase, maintain or improve the functional capabilities of individuals with disabilities in all aspects of life, including at school, at work, at home, and in the community," ("Tools for Life"). Assistive technology devices come in three different categories: low-tech, mid-tech, and high-tech. Each of these categories has specific usage purposes and can be provided to students in order to ensure equal access to materials with their peers without disabilities in their general education classrooms.

Low-tech AT are "devices or equipment that don't require much training, may be less expensive and do not have complex or mechanical features," ("Tools for Life"). A low-tech device could be something like a pencil grip. A pencil grip is a small piece of rubber that can be slid onto the base of the pencil. This makes the place where the student holds the pencil a bit wider, as well as a bit stickier to ensure a firmer grip. This type of device could be exceptionally useful for students with fine motor deficits to improve their handwriting capabilities, as well as

increase their ability to provide high-quality work. Another example of a low-tech device is a

magnifying glass. Magnifying glasses are useful for students with vision difficulties, as it helps

them enlarge their text for easier reading. Many students can benefit from low-tech assistive

technology devices; even students without disabilities can find higher levels of success in the

classroom through low-tech AT usage. Types of low-tech AT that can assist with both gen ed

and special ed students include but are not limited to the following items: left-handed scissors,

handouts with assignment examples on them (sandwich charts to help write paragraphs, math

problem breakdown explanations, etc.), flashcards, large-print text, and many more technologies.

These items, although seemingly minuscule and common, provide significant assistance to

students who may need a small boost to encourage them to achieve higher levels of success in

the classroom.

Mid-tech AT are devices that "may have some complex features, may be electronic or

battery-operated, may require some training to learn how to use and are more expensive than the

low-tech devices," ("Tools for Life"). An example of a mid-tech device is a calculator. A

calculator can be provided to a student with a learning disability as an accommodation for their

math assignments. When their general education peers must do their basic math in their head or

manually on paper, students with learning disabilities may have access to calculators to assist

with their assignments (as written in their Individualized Education Plan {IEP}) in order to

"level the playing field" with their gen ed peers. Another example of a mid-tech device is a

manual wheelchair. Manual wheelchairs are perfect for assisting people with gross motor

difficulties in their movement. Many mid-tech devices are used, especially in this day and age of

the "technology take-over" (Jones and Villacreses), as general items in the classroom. These

types of devices may include, again, calculators, audiobooks/audio texts, proofreading software

(Grammarly, spellcheck, etc.), "help" apps for different core classes (Scribbr, EasyBib, Khan Academy, etc), and closed captioning on videos shown in the classroom. The difference between these items being utilized as accommodations for the special education students and being utilized as general classroom tools is minuscule. The one defining difference is the fact that in many student's IEP's, they call for these tools to be used even during assessments, whereas their gen ed peers may not have the option to use those same tools whilst being assessed.

High-tech AT is "the most complex devices or equipment, that have digital or electronic components, may be computerized, will likely require training and effort to learn how to use and cost the most," ("Tools for Life"). These types of devices include, but are not limited to: motorized wheelchairs used to assist with transportation/movement in people with significant physical challenges, Augmentative & Alternative Communication (AAC) devices, used to assist people with language needs in their daily communication (this can be basic words with visual images that when tapped are spoken aloud by the device, a keyboard where the user can type their words and the device will speak, a talker that is controlled by head motions of a person with both significant language needs and significant fine and gross motor deficits, and more), voice-activated assistive devices to support people with fine/gross motor needs, and numerous other examples. These types of devices are typically exceptionally more expensive and require extensive training in order to be implemented appropriately. Ordinarily, general education peers will not use these types of devices in their everyday classrooms, as they are much more complex and not designed for general use, but rather to assist with the significant needs of the user.

With this massive boom in assistive technology, one would assume that students with disabilities that have been mainstreamed into the general education curriculum classrooms would be graded on a similar scale to general education students in the same classes. However, this is

unfortunately not the case. Students with disabilities that have been educated in an inclusive

setting tend to continually score lower and receive worse grades than their general education

peers (Munk & Bursuck, 2001). Contrary to popular belief, this may not necessarily be the fault

of the educators. In many circumstances, teachers feel as if they cannot positively implement

their students Assistive Technology devices effectively in their classroom due to a lack of

training and understanding of the technology itself. In fact, researchers Yeunsoo Lee and Luis A.

Vega published the following excerpt in the Journal of Special Education Technology (61):

> "Respondents identified that lack of training was their biggest barrier to using AT
>
> Colleges and universities have begun to offer AT courses; however, a large portion of
>
> teachers earned their credentials or certificates before the courses were available. The
>
> training or retraining of teachers should not depend solely on teacher preparation
>
> programs or individual school districts. It is crucial that school districts and teacher
>
> preparation programs actively collaborate to provide classroom, in-service, or online
>
> training."

Additionally, although universities may provide AT courses, they are not always a

required course for all education majors to participate in. Essentially, at some universities, it is

only a mandatory part of the special education major curriculum, which puts general education

teachers at a disadvantage. For example, at Eastern Michigan University, there is only one class

that focuses on people with disabilities offered as a general education course. Although this class

is offered, is not mandatory to be used for credit by all education majors, it is only one option

they have available to them ("Program: Perspectives on a Diverse World - Eastern Michigan

University - Acalog ACMS™"). If a student in the EMU education program chooses to take one

of the other options offered to fulfill that credit, they will not even receive a single course on

working with the disabled population at their future career placement. In a more general sense, since general education teachers are not always required to take an AT course, many gen-ed teaching candidates graduate without any knowledge of AT. When they enter their own classrooms, they may not have the ability to appropriately utilize the technology provided for their inclusion students, nor are they likely to know what types of technology they could attempt to implement in order to assist their students with disabilities.

Regrettably, as a side effect of the ill amount of education these teachers receive on working with a diverse population of disabled individuals, they tend to need more support in their classrooms than should be necessary. A few of the most common interventions used in the gen ed classroom to support their mainstreamed special ed students are Functional Behavior Assessments (FBA) and Behavior Intervention Plans (BIP) (Rosenzweig). These types of interventions require the student's teachers to document data regarding the different types of strengths, weaknesses, and behaviors of the student before working with a team of professionals (special education teacher, social worker, speech therapist, etc.) to create an effective intervention plan. Unsurprisingly, according to a study done by Kate Rosenzweig, "100% of the teachers surveyed would not feel comfortable taking and recording ABC data in preparation of a BIP," (Rosenzweig). This is a huge issue because these types of assessments are detrimental for the majority of the mainstreamed inclusion students to finding success in their general education classrooms. As a result of this massive insecurity that our gen ed teachers feel regarding assisting with the disabled population in their classroom, they tend to rely heavily on the special education teacher to assist them with all types of interventions (Mader). According to researcher Bonnie S. Billingsly, approximately 50% of special educators leave the field within the first 5 years of teaching (Billingsly 42). As a follow-up to this data, researchers Olivia R. Hester et al. state that

"A vast majority of the research on attrition identifies burnout as the main reason for teachers deciding to leave the field," (Hester et al. 361). This is partially due to the massive weight that is placed on special education teachers (Maten) to not only do their own job for their own students, but also to act as a sounding board and support system for all of the general education teachers in the building who do not feel comfortable or sufficiently trained in coming up with interventions and accommodations/modifications for their disabled students.

The question, although lengthy, then becomes 'how do special educators, offer support and resources to general education teachers that assist them in implementing assistive technology in their classrooms for their inclusion students *without* relying so heavily on the special educator to do the legwork for them?' A short answer would be to have the special educators provide their vast knowledge of resources that they have readily available and encourage the general educator to research on their own. However, that is not always effective, as the general education teachers often also have heaping plates of work to do outside of their classrooms, just like special educators do. Due to this conundrum, a colleague, Daniel Collins, the Adult Transition Teacher at Ferndale High School and I have created a methodology that can be used to assist general educators with the implementation of assistive technology in their classroom without leaning excessively on the special education teachers to do the work for them. This research is based upon personal experiences of myself and my colleague, as well as research we gathered over two academic years (Fall 2018 – Winter 2020). This research has been presented in one Undergraduate Symposium at Eastern Michigan University (Winter 2019) and proposed and accepted for a second symposium (Winter 2020) which was canceled due to the impact of COVID-19 on our academic year.

2 | Dr. Joy Zabala's "SETT Framework"

In the 1990s, Dr. Joy Zabala created what is called the SETT Framework. The SETT Framework is a tool that educators throughout the United States use to aid them in finding and implementing the appropriate AT for their students in their classroom. This framework has been the grounding point for Mr. Collins' and my research. We used the teachings that Dr. Zabala created in order to design our own framework for teachers to use when attempting to utilize Assistive Technology for their special education students. Although our framework is distinct from and serves a different purpose than Dr. Zabala's, it is still important to be included in this research, seeing as it was the groundwork for us in creating our own methodology.

The SETT Framework stands for "Student, Environment, Tasks, and Tools". As published in Dr. Zabala's framework research,

> "The SETT Framework is a tool that helps teams gather and organize information that can be used to guide collaborative decisions about services that foster the educational success of students with disabilities. Originally developed to support assistive technology selection and use in educational settings, the principles of the SETT Framework have been used to guide decisions about a much broader range of educational services, and also, with minor adjustments, have been successfully used in non-educational environments and service plans," (Zabala).

This framework has been proven to be useful for a multitude of teachers to effectively find assistive technology in their classrooms. In fact, in a study done by multiple researchers and published in the Journal of Special Education Technology,

"over half of the PST (51.5%) mentioned recommending AT by assessing the student with SETT. Participants were able to select key information to provide a more refined answer. Responses indicated that, after the intervention, participants could apply the SETT framework using all available information in order to make appropriate AT selections," (Jones, et al.).

Because the SETT Framework is so widely used, it is important to recognize what each of the letters means in order to fully understand the impact that it has on the selection of AT in the gen ed classroom. As previously mentioned, SETT stands for Student, Environment, Tasks, and Tools. According to Dr. Zabala, "Although the letters form a memorable word, they are not intended to imply an order, other than that the student, environments, and tasks should be fully explored before tools are considered or selected," (Zabala, "Joy Zabala SETT Framework"). Each letter represents an important part of the process of deciding which Assistive Technology device is appropriate for each student.

The "S" of the SETT Framework, "Student", is intended to be used as a reminder to always put the student first. There is a tendency for teachers to think about what will make their life easier when they are looking for interventions for their student. Regrettably, the student can oftentimes be overlooked because teachers can become so focused on *solving the behavior*, that they miss focusing on what will *help the student*. Dr. Zabala has published a list of important things to keep in mind when focusing on the "S" in the SETT framework. This list includes (Zabala):

- "Focusing on what the functional area(s) of concern for the student are"
- "What the student is struggling with/what they need assistance on before they can complete something independently"

- "What the student's special education diagnosis is"

- "What the expectations and concerns of the student are"

- "What the student's interests, and preferences are"

When focusing on the student, educators will find that the AT they utilize will be considerably more effective, as it will cater to the student's strengths, abilities, and interests. This will help the student produce superior levels of work in comparison to what they were completing before the implementation of their technological device because they will not only have a useful tool, but they will also have an intrinsic desire to use the device since it is catered directly to them.

Alternatively, the "E" (Environment) in the SETT Framework is important for the teacher to focus on because it can aid in ensuring that the technology that is chosen for the student works in the classroom and is not a hindrance for themselves, the teacher, or the student peers. If a teacher is attempting to find a device that will assist their student in reading comprehension and they believe a text-to-speech device that translates written words into a spoken format so the student has auditory input, it is important for the teacher to also analyze the environment that this technology will be implemented in. This type of technology, although useful for the student it is intended for, can be disruptive to the student's peers. If the environment of the classroom is one in which this could become an issue, it is important to modify the device to fit that environment. This could mean anything from simply giving the student headphones, to even finding a completely different type of device that is more effective in that specific classroom. Dr. Zabala's list of important things to keep in mind when considering the environment of the AT device includes the following items (Zabala):

- "Arrangement (instructional, physical)"

- "Support (available to both the student and the staff)"

- "Materials and Equipment (commonly used by others in the environments)"

- "Access Issues (technological, physical, instructional)"

- "Attitudes and Expectations (staff, family, other)"

The final thing to consider in the SETT Framework before attempting to find the appropriate "Tool" is the "T: Tasks" that the student needs to be able to complete. This is arguably one of the most important parts of the SETT Framework because whatever tool you provide for your student *must* be able to assist them with the tasks they require a service for. If you look at this from the lens of an ordinary classroom standpoint, you will never provide a student a calculator to assist with their writing assignment in their English class; that would be ridiculous. That same concept applies to finding AT for your inclusion students. You simply cannot provide students with whatever tool you feel like providing without first considering the tasks that they are struggling with. According to Dr. Zabala, the following items are necessary for consideration when focusing on the student's tasks (Zabala):

- "What SPECIFIC tasks occur in the student's natural environments that enable progress toward mastery of IEP goals and objectives?"

- "What SPECIFIC tasks are required for active involvement in identified environments? (related to communication, instruction, participation, productivity, environmental control)"

Without first considering these tasks, you will be providing a disservice to the students in your class, as you will not be giving them the best possible options for achievement. When the end goal is success, you must first identify strengths and weaknesses and pinpoint exactly where assistance is needed.

After fully considering the student, the environment, and the tasks necessary for improvement, you can finally begin focusing on the final "T" in the SETT Framework, the "Tools". This is where you begin to dive into the different high-tech, mid-tech, and low-tech devices available for your student, as well as different services that they may be able to utilize. This piece is important because these tools that you are choosing to provide could be the stepping-stones to each student finally finding success and achievement in their academics and personal life. When considering which tools to choose, Dr. Zabala recommends the following (Zabala):

- "Is it expected that the student will not be able to make reasonable progress toward educational goals without assistive technology devices and services?"
- "If yes, describe what a useful system of supports, devices, and services for the student would be like if there were such a system of Tools."
- "Brainstorm specific Tools that could be included in a system that addresses student needs."
- "Select the most promising Tools for trials in the natural environments."
- "Plan the specifics of the trial (expected changes, when/how tools will be used, cues, etc.)"
- "Collect data on effectiveness."

Once you have chosen your tools, you can begin implementing them into the classroom. It is important to realize that these tools are not necessarily the "end all, be all" of supports that your students will need to utilize. Of course, tools are always going to be trial and error. Sometimes, you will follow every single step of the SETT Framework and choose a tool or service that you feel is absolutely *perfect* for your student. Then, when implementing the tool, you may realize

that this tool is not working, and you need to fully rethink which path you take when choosing a new tool for your student to use. This is normal and happens often, no matter how confident we feel in the devices we have chosen.

Although many gen ed teachers are trained in the SETT Framework, once it comes to actually implementing the technology in their classroom, there is a tendency for them to freeze up and rely on the Special Education teacher(s) to assist them in the actual selection and implementation of AT in their classroom. According to a study that was published in the Journal of Special Education Technology, "a few PST said they would need an expert or a special education teacher to do the evaluation to determine need for AT (Jones, et al.)."

So, although the SETT Framework has been fully described, the question remains: 'how do special educators offer support and resources to general education teachers that assist them in implementing assistive technology in their classrooms for their inclusion students *without* relying so heavily on the special educator to do the legwork for them?' As previously mentioned, a colleague, Daniel Collins, the Adult Transition Teacher at Ferndale High School and I have created a methodology based on Dr. Joy Zabala's SETT Framework. This framework is to be used once the AT tools have been selected, to ensure that the general education teachers can appropriately implement the technology in their classrooms without relying so heavily on the special educators in their building.

3 | The C.L.A.P. Methodology

Throughout our years studying Special Education at Eastern Michigan University, Daniel Collins and I have discovered that there are unequal opportunities for the general education teaching majors to learn about Special Education in comparison to the wide breadth of knowledge that is provided to the Special Education teaching majors. Students studying general education do not have many special education class requirements. This is actually providing a major disservice to them. These students are going through their coursework without being prepared for the reality of the fact that their future classrooms will definitely include many students with disabilities, especially during this huge boom in inclusive practices in the school systems.

To level out this unequal playing field of learning opportunities, Mr. Collins and I created a methodology, fully grounded out of Joy Zabala's 'SETT Framework' that will assist gen ed teachers in the implementation of Assistive Technology in their classrooms. This framework is intended to take the pressure off of the special education teachers to be the only people to educate the gen ed teachers on effective practices for mainstreamed special ed students. Our hope with the creation of this methodology is that general education teachers will use our practice in order to take control over their classrooms without banking on the special ed teachers to provide that excessive support.

The methodology that we have created is called 'The C.L.A.P. Methodology'. Each letter in the methodology is meant to be utilized in the order that it is presented, and is based on personal experience, professional research, and many academically based conversations. The 'C.L.A.P.' in the C.L.A.P. Methodology stands for Communicate, Locate, Advocate, and

Participate. Throughout the course of this publication, I will be explaining in-depth the research and justification behind each of these letters, as well as diving into some tips and tricks for implementing these steps into your classroom. Each letter has its own specific function and

purpose in the utilization of Assistive Technology in students' academic and personal lives. This framework can be employed by teachers, caregivers, family members, etc. for the betterment of a child's access to appropriate Assistive Technology wherever they go.

4 | The C.L.A.P. Methodology: Communicate

Communication is arguably one of the most important aspects of functioning as a human being. From the day we are born, we must utilize communication in order to receive the things that we need. As infants, we cry when we are tired or hungry, then we begin to babble, and eventually, the majority of people begin to talk. Those folks who do not develop spoken language still must communicate in some way, so they use behavior to express their wants and needs, or they utilize technology to connect with others. No matter your level of spoken language, every single person has at least minimal methods of declaring their necessities. Communication is also utilized in a multitude of ways, other than just to declare wants and needs. Communication is used to express feelings, and articulate abstract concepts, and, notably, to build and maintain personal and professional relationships.

When a general education teacher has a student with a disability in their classroom, one of the most important things that they need to do in the very early stages of the formation of their relationship, is to figure out an effective way to communicate with each other. Depending on the differing types of disability that the student(s) may have, their communication may look different than that of the neurotypical general education students. For example, if a student is on the Autism Spectrum (a disability "characterized by qualitative impairment before the age of three in verbal and nonverbal communication, reciprocal social interaction, and a markedly restricted repertoire of activities and interests (Bell 828)") they may need communication to come both auditorily and visually in order for them to obtain the information and meet it with the greatest degree of understanding. According to a study done by researchers Blythe A. Corbett and Laura J. Constantine (399), 78% of the cases of students studied retained information at a much higher

level when provided with both auditory and visual materials. Based on this, the teacher would most effectively communicate with this student by providing both types of materials for the greatest amount of understanding.

If there is a student with a speech and language disorder (characterized by impairment in articulation, fluency, voice, and language ("Speech and Language Impairments | Center for Parent Information and Resources")), the communication between teacher and student will look different than that which is observed between gen ed student and teacher as well. This type of student will definitely receive services from the Speech and Language Pathologist (SLP), but outside of their work with the professional, they will still need supports from their teacher in order to receive and retain communication effectively. Some communication techniques that can be used are, using verbal cues, using taped or recorded lessons, and standing near the student when talking to them ("Do2Learn: Educational Resources for Special Needs").

Although all of these types of communication are necessary for the general ed teacher to learn, especially when implementing Assistive Technology in their classroom, the "C" in C.L.A.P. actually is referring to a subtype of communication, which is communication with the student, special ed teacher, SLP, parents, etc. Once a teacher has completed their analysis of the student based on the SETT Framework and has established the appropriate "Tools" necessary for their particular student, they must begin the process of communicating their decisions to everyone involved in ensuring the student's wellbeing.

There are multitudes of people that should be involved in the implementation of Assistive Technology in the student's life. These people include anyone professionally involved in the student's life, anyone, directly personally involved in the student's life that will be assisting with the technological implementation while at home, and, unequivocally, the student themselves.

According to includenyc.org, the following group of people is mandated to be involved in the IEP process for each child with a disability. This list also includes their roles and responsibilities in the IEP process which verifies their inherent necessity to be included in the communication portion of executing the usage of Assistive Technology in the child's academic experiences ("Assistive Technology and the IEP"):

- "The parent is a full team member and should be ready to participate. Your ability to describe your child's needs and strengths keeps the focus on your child and can influence the outcome."
- "The district representative acts as the chair, facilitates discussion, and must be knowledgeable about special education services. It is common for one member to perform two roles."
- "A school psychologist explains the evaluation results and shares information with team members."
- "A special education teacher assists with decisions about supports, services, curriculum modification, and goal setting."
- "A general education teacher will participate, if your child is in a general education classroom."
- "The student (age 15 or older) is required to be invited. Younger students may also participate. Students can participate in all or part of the meeting. Participation is an important step in developing self- advocacy skills."
- "Other participants may include a school social worker, related service providers, school physician, or anyone who has special knowledge of your child."

The reason that each of these people is necessary for the "Communication" portion of the C.L.A.P. Methodology, is because they are all directly involved in bettering the life of the

student that we are providing technology for. Each of these people plays a very important role in the growth and development of the child both academically and socially; because these are the primary educators in the child's life, it is vital to the success of AT usage to make sure each of them is fully trained in how to use the technology that has been provided.

In order to follow through with the 'communicate' portion of the C.L.A.P. Methodology, we must begin by communicating with the student for whom the technology is being given. The student is the most important part of the entire AT implementation process, so we need to ensure that they are fully prepared to receive and begin utilizing the technology we are providing. Of course, if possible, the student must be included in the decision process *before* the technology has been selected. However, just because they assist with the choosing process, does not necessarily mean they are prepared for the actual utilization of the technology to begin. It is crucial to always *communicate* with your student ahead of time what the technology is and how to use it. It is also important to express to them *when* you will begin to teach them how to use the technology. The teacher must fully prepare the student before implementing the technology so as to avoid any extra stressors when beginning to teach them a new skill.

Another person to include when the teacher is communicating with the student is their parent or guardian. This person is directly connected to the student and must be kept in the loop at all times. Teachers can communicate with this person in order to utilize them as a resource in the implementation process. Teachers can communicate with them just to ensure that they are on board with the technology choices that have been made with their student. Teachers can even communicate with them via notes home, text messages, etc. just to continuously verify that they

have all of the information absolutely necessary before their child begins using their new tech

device. There are many methods and reasons for communicating with the child's parent, but all it

boils down to is that they are, hopefully, their child's biggest supporter and they deserve to feel

included. Parents can prove to be a great resource to the teacher, as they should know their child

better than anyone else and will hopefully be able to influence their child into supporting the

usage of new technology in their everyday life, as well as assist in teaching them how to use the

technology appropriately in the home setting.

Once the student and the parents/guardians have been communicated with, it is necessary

to begin including the school system's professional staff, specifically the ones that work directly

with the child (SLP, Social Worker, Psychologist, OT, etc.), of the process in which the routine

of employing a new assistive technology device is being carried out. These people are the

backbone support of the child's progress at school. Each person plays an incredibly important

role in encouraging the student to succeed in whatever endeavors they pursue while in the school

system. It is imperative that the general education teacher communicates the technology with

each of these individuals so that they are prepared to work with the teacher and student alike in

the actual exertion of technology in the student's academic practices. More than likely, the

student will receive at least some types of services during the school week. These services could

include Speech Therapy, academic resource room assistance, social work services, psychological

services/therapy, Occupational Therapy, etc. We must include these different therapists and

professional employees in our communication so that they can ensure that the chosen Assistive

Technology is used in the therapeutic and recreational services that they provide directly to the

student.

"It is reasonable to assume that if teachers and other professionals in the field of early intervention have inadequate skills and knowledge about technologies, they are failing to consider and use assistive technology with young children (Judge 20)." Based upon this quote,

by researcher Sharon Judge, as published in her study entitled "Constructing an Assistive Technology Toolkit for Young Children: Views from the Field", and published in the Journal of Special Education Technology, we can gather that her research shows that without the proper information about AT, teachers and professionals will not use technologies effectively with their students. We can close this gap and ensure that students are receiving the support that they need and that the professionals we work with are receiving all of the information and training they deem necessary through intentional *communication* about what each technology is. It is also paramount to communicate with these professionals about what the purpose of the technologies we are enforcing are, and how to use these technologies appropriately when working with the individual student that is receiving technological assistance.

5 | The C.L.A.P. Methodology: Locate

When it comes to the utilization of new technologies in a student's everyday life, it is important to continuously collect data on how everything is going. This is where the 'L' of the C.L.A.P. Methodology, "Locate", comes into play. As Dr. Joy Zabala says in her narrative on the SETT Framework, we must "collect data for effectiveness," (Zabala). Just as we must compile evidence that the student needs Assistive Technology tools, we must also compile evidence that the Assistive Technology tools that we have selected are being put to use adequately.

There are many different things that need to be *located* whilst analyzing the student's technology usage. To begin, the teacher must first locate the areas in which the child is having success with their new AT. This will consist of persistent tracking of achievement, no matter how minimal the success may seem. For instance, if a student's new AT is a core board communication device, perhaps a success would be simply that they bring their core board with them to every activity throughout the day. This can be located as a strength and documented that way as well, even though it does not necessarily have to do with the actual usage of the technological item. Another example of a strength that could potentially be observed in the early stages of using a device, like a core board, would be the student's success in identifying even one word on the board. The way a core board works is that there are small tile images of core words, such as "in", "out", "stop, "go", "please", "thank you", "help", etc. These are strategically placed on the board in convenient places for the student's visual and fine motor (pointing) location of the words they are looking to communicate. There are many different types of core boards, ranging from singular words, laminated on a square of cardstock, to full categorical, high-tech touch-to-speak devices through which the student can tap multiple buttons and then hit the

"Speak" button and the device will speak out full sentences for the child. All things considered, there are many areas where strengths could be located, traversing anywhere from the student knowing one word out of the large quantity available, to the child smoothly and effortlessly

tapping multiple core tiles in a row in order to formulate full thoughts.

In addition to locating the student's strengths in their AT usage, the teacher must also be able to locate and collect data on the student's areas of necessary improvement. As with any new skill, when a student is learning how to use a fresh piece of technology, they are bound to have hurdles to overcome. It is vital to be able to locate these areas of need exceptionally early on so that the support staff and family members can swoop in with assistance to ensure that the technology does not become a chore or a burden for the student. In a literary analysis of researchers Bonnie Todis and Walker M. Hill's published study on Assistive Technology, as done by Occupational Therapists Jodie Copley and Jenny Ziviani, there has been much "criticism at assessments that fail to investigate the impact of AT use within students' daily physical and social environments (Copley and Ziviani 234; Todis and Walker)." After reviewing this research, we can conclude that it is imperative that the teachers properly locate areas of hardship in the student's new learning of their device, so as to avoid any burnout or further frustration with the changes in their learning techniques. If we miss the target of locating the areas of need early on, it is likely that the student will begin to experience technology fatigue, or will become discouraged with their new technology, which further heightens the risk of the student losing interest and/or motivation to continue using their AT in both home and school, eventually abandoning them altogether (Copley and Ziviani 234).

To continue, a following area in which the 'L' of the C.L.A.P. Methodology, "Locate" must be employed, is the location of a possible alternative to the current technology. Although

this may seem hasty, it is paramount that the teacher is thoroughly prepared for the potential

instance that the first technology that they have chosen is proven to be unsuccessful. The

following passage comes from the AT Resource Guide as published by the disability advocacy

and research organization OCALI. It gives some fundamental reasoning as to why it is necessary

for the teacher to always locate a possible "next choice" of AT when making their Assistive

Technology decisions.

> "Assistive technology needs are reassessed any time changes in the student, the
>
> environments and/or the tasks result in the student's needs not being met with current
>
> devices and/or services.
>
> **Intent:** An assistive technology assessment is available any time it is needed due to
>
> changes that have affected the student. The assessment can be requested by the parent or
>
> any other member of the IEP team ("The Assistive Technology Assessment Process in
>
> the School Environment" 84)."

As implied in the passage above, it is critical that the need for new technology is located as

quickly as possible in order to begin the reassessment process immediately. Ultimately, this

process needs to happen swiftly so as to avoid any possible degeneration in the student's skill

and ability level due to inactive usage of the appropriate technology.

A final way in which teachers must employ the use of C.L.A.P.'s "L" in their classrooms

when it comes to their students with disabilities and the assistive technology they are using, is

the continuous *location* of new and improved technologies. Although students are utilizing the

technology that is being provided for them, and it can take quite a while to become accustomed

to the new tech device, there are also always new technology designs being released. It is

reasonable to assume that whatever technology has been chosen by the team for the student is

going to be considered "modern" and "effective" for at least a couple of years. However, just like any other technology, there comes a point at which the device will become considered "old", "out of date" and/or a "dinosaur". We can see this when we look at the difference between cell

phones today versus cell phones in 2010. In 2010, one of the greatest phones was the Blackberry (New Atlas). This phone was either a flip, or a slide phone/keyboard (depending on the style of the cell phone), that had external keyboard buttons, and if you were lucky, a small touch screen. In 2020, just ten years after the popularity of the Blackberry, the most sold phone was the Apple iPhone 11 (Kumar). This phone is a full touch screen smartphone with 3 or 4 cameras (depending on the style of the cell phone), facial recognition software, and much more. As you can see, there has been considerable growth and development in the quality of our cellular technology. The same goes for the different types of AT that are available for our students. If we saw someone walking around sporting a Blackberry today, we would probably be shocked at the "dinosaur" they were toting. Why would we settle for the very thing we look down upon when we are considering our students who use AT? We, as teachers, must be active in continually locating updated and generationally appropriate technologies for those students we are supporting. In an article by Dena Gassner, "a wife, mother, grandmother, social worker, Ph.D. student, and autistic *(Gassner),"* about her son, also on the Autism Spectrum writes the following regarding her son's success using AT:

> "Every moment of his life benefits from the use of both simple and complex assistive technologies help with school and home. He has achieved the level of independence we had most envisioned in our dreams for him, not by outgrowing technology, but by maximizing technology (Gassner)."

It is essential that we maximize the technology available to our students by continually locating the greatest devices procurable. Although some devices are tried and true and have/will continue to withstand the test of time, there are others, typically high-tech devices that will need updates and revamps more often than can be expected. We must be prepared and willing to provide those updates to our students in order to guarantee their best possible chances at success in the utilization of their Assistive Technology in both home and academics.

6 | The C.L.A.P. Methodology: Advocate

Advocation, whether from others, or for themselves, is easily one of the most crucial foundational elements of success in the lives of those with disabilities. "The past three decades witnessed a new affirmation of human and civil rights and a determination on the part of disadvantaged groups, including people with disabilities, to speak out and act on their own behalf (Bhattarai et al. 98)." Because of this major growth in the normalization of disabled persons advocacy, there has been a massive boom in the call for assistive technology to be properly provided for students with disabilities.

With this call for appropriate AT provision in schools is the need for students with disabilities to be consistently placed and maintained in their least restrictive environment or LRE. The LRE, as defined by the Individuals with Disabilities Act 2004 (IDEA), encapsulates, and mandates by law the following ideals:

> "(i)To the maximum extent appropriate, children with disabilities, including children in public or private institutions or other care facilities, are educated with children who are nondisabled; and ("Individuals with Disabilities Education Act (IDEA)")"

> "(ii) Special classes, separate schooling, or other removal of children with disabilities from the regular educational environment occurs only if the nature or severity of the disability is such that education in regular classes with the use of supplementary aids and services cannot be achieved satisfactorily ("Individuals with Disabilities Education Act (IDEA)")."

To simplify, the LRE is a law that requires schools to place students in the classrooms where they are most likely to receive the greatest amount of interaction with age-appropriate, typically-

developing peers. This could be full-time inclusion in a general education classroom, a self-contained classroom with multiple hours of push-in into the gen ed classroom per day, a majority gen ed with a small amount of pull-out with a special education teacher in a resource room, etc.

This is important to the growth and development of persons with disabilities as it provides them with the social and academic interaction necessary to stimulate growth in academics and functional daily living skills.

In conjunction with the physical placement of a student in their least restrictive environment, the term LRE also includes the application of appropriate accommodations and modifications in the student's life that assists them in their journey to success in their classes. This is where the 'A' of the C.L.A.P. Methodology, "Advocate", comes into play. Many times, general education teachers do not know that in order to provide appropriate accommodations and modifications to their students, they must *advocate* for their students, and for the furnishing of the potential equipment necessary. There are multiple routes of advocacy that are necessary to ensure that these things are provided for their student, which will be discussed in the coming segments.

To begin, the general education teacher must advocate for the student to be included in the AT decision process and IEP meeting.

"Involving students in the IEP process provides the opportunity for them to work on self-determination skills such as self-advocacy and goal setting (Test & Neal, 2004). However, students are often overlooked as self-advocates for their own learning (McGahee, Mason, Wallace, & Jones, 2001). They may not know exactly what it is they need, but they do know what they want and what they are interested in. If they do not, it is important for them to know how to advocate for themselves," (Pounds and Cuevas).

Based upon the previous quote, we can recognize and understand the seriousness of advocating for the inclusion of our students in their IEP meetings. They must learn how to advocate for themselves and their needs, so we, as their teachers, must be willing to start that

process off by advocating for them to get their foot in the door of their IEP meetings as soon as possible. The only caveat to this is that it may not be appropriate for all students to attend their IEP meetings, dependent upon their maturity and ability level. As the writers for understood.org say, "having your child attend an IEP team meeting is a big decision. Before going forward, it is a good idea to talk with both the IEP team and your child. What might be appropriate for one child may not be for another, depending on age and maturity (Team)."

Beyond the need for the teacher to advocate for their student to attend the IEP meeting (if appropriate), the teacher must then advocate for the student to receive the assistive technology that is necessary for the student's continued growth. At the IEP meeting, there will come a time when the psychologist or whoever is leading the meeting, should request any comments regarding necessary technology to be brought forward. At this point, it becomes the teacher's responsibility to advocate for their student's technological needs. By the time the IEP meeting is being held, the teacher and all other professional staff that have worked with the student will have done their observations on the student's areas of progress and improvement. They should also have had a decision meeting/discussion on what types of assistive technology may be necessary and appropriate for the student. Once the school psychologist has presented the space to discuss potential AT needs, it is the opportune time to mention the technology that has been discussed. It is also necessary to provide the data that has been gathered verifying the essentiality of that specific AT that has been chosen for the student. This is a necessary time for the teacher

to advocate for their student's needs, in order to guarantee that the technology is provided, no matter how costly.

Unfortunately, it is not uncommon for schools to be tempted to deny some technologies due to the expensive nature of some of the more high-tech devices. However, it is actually illegal for schools to do this. "IDEA has specifically identified assistive technology as a service that may be provided to young children with disabilities. However, the provision of appropriate assistive technologies cannot occur in the absence of additional services. IDEA also requires school districts to provide "assistive technology services" to eligible children with disabilities (Parrette Jr. and Murdick 197)." Many teachers, especially general education teachers, are unaware of this IDEA law. Because of their lack of knowledge on special education law, it becomes likely that teachers will bypass the window of opportunity to fully advocate for their students' needs. When this occurs, students can, unfortunately, miss some critical stages of development that could occur had they had direct access to technologies they can benefit from.

Without teachers who are willing to advocate for their student's access to appropriate assistive technology, among other supports that bolster growth and social confidence, students with disabilities are at a disadvantage. It is important for teachers to always remember to advocate for their student's needs in order to help them obtain the necessary supports that will skyrocket them into achieving greater success at home and school.

7 | The C.L.A.P. Methodology: Participate

The final stage of the C.L.A.P. Methodology is to 'P': "Participate". There is a multitude of different ways in which participation is necessary when implementing new technology into a student's life. "Studies of AT utilization have suggested infrequent use of prescribed devices in the home, vocational and community settings," (Allaire et al., 1991; Derer et al., 1996). When there is minimal participation in the usage of the provided assistive technology devices by the student, there are bound to be major setbacks in their growth and development both academically, and likely, socially/functionally. It is imperative to the success of the student that they themselves are encouraged to participate in the learning and implementation of their new technology, that their teacher participates in the utilization of the technology in their class, and that their other supporters (parents, OTs, SLPs, etc.) are also active participants in the AT process.

The student is always the most important part of the equation when it comes to the success of their AT usage. If they are not motivated to participate in the employment of their assistive devices, no matter how low or high-tech, then the support will not be effective. Therefore, it is pressing that the general education teacher takes an active role in encouraging the student to at least attempt to participate in the handling of their provided technology. One way the teacher can encourage the student's participation is through the promotion of independence. For students who are learning in an inclusive setting, likely, one of their goals for the future, just like any other kid, is to maintain some amount of independence from their parents or constant adult supervision. They also likely want to become independent in most, if not all areas of their academics. Of course, this is the reason they are receiving AT devices and services: to achieve independence. However, simply receiving the device is not a "quick-fix". The student must put

in time and effort in order to learn the device, figure out the best ways to utilize it in their classroom and home, etc. This is where the general education teacher can swoop in and begin encouraging the student to participate in the "acquainting" process with their new device.

It is also critical that the parents and professional staff (OTs, SLPs, Social Workers, etc.) participate in the process of encouraging the student to operate their AT. These people are the ones that focus specifically on the development of the student's skills in their functional daily living skills, as well as in their potential future jobs, specific areas of their academics, their fine and gross motor functioning, and much more. Of course, it is necessary for them to set a good example of participating in the utilization of assistive technology with their student.

When looking at the role of an Occupational Therapist as an example, we find that they play a key role in the selection decision and the implementation process of AT. In fact, the American Occupational Therapy Association (AOTA) published an article regarding the OT's role in promoting success in AT, and expressed the following:

> "Occupational therapy practitioners' understanding of occupational needs and performance, coupled with their skills in activity analysis and focus on achieving client goals, strongly support the use of diverse types of assistive technology within models of best practice. That perspective helps identify and integrate desired features of assistive technology solutions, as well as address potential barriers to integrating assistive technology into the client's daily routines (American Occupational Therapy Association)."

It is important to note that the OT plays a vital role in the AT process with the student, but it is also the teacher's job to ensure that the OT is current on their data and information regarding the student's progress with the device. Typically, an OT will only see the student once or twice a

week in comparison to the teacher seeing the student every day. The teacher should constantly be

participating in monitoring the student's usage habits, strengths, struggles, etc., and reporting

these things to the OT whenever they are in the classroom. Although Occupational Therapy was

the example used here, the same goes for any professional staff that will be providing services to

the student. The teacher must report the student's AT usage data as it pertains to the SLP, the

social worker, the psychologist, etc. whenever they are in the classroom and prepared to engage

with the student.

The parent plays another considerable role in the participation process of the C.L.A.P.

Methodology. What the student does and how they act in school versus what they do and how

they act in the home can be completely separate. This could be due to a number of things, such

as the environment, the culture of their home vs. the school, the amount of support their parents

are able to provide, their comfortability level, and more. Because of this, and because Assistive

Technology is meant to be used to assist in both academic and personal life, teachers must

encourage parents to participate in their child's AT usage. If a student is using their Assistive

Technology at school but are not using it at home, there comes a potential for gaps in

understanding the ways in which their technology can be helpful with their daily functional

living skills or social skills, there can become setbacks in the growth patterns the student displays

due to infrequent usage and more. The PLUK Family Guide to Assistive Technology

recommends that parents participate heavily in the selection and usage of assistive technology

for their child, as they have a better chance of getting what they need for their child and out of

their device if they are active participants, rather than if they let the school professionals do all of

the work (Kelker and Holt). If the parent is an active participant in the child's AT usage, the

student will be more likely to find success in all aspects of their life, simply because they will be

exposed to the necessary technology no matter where they go. If they are utilizing a "talker" or a

voice-equipped, text/touch-to-speak core board and they only use it at school, they will likely be

making strides in academic progress, but there is a very high chance that there will still be areas

of concern in their home and personal life. Once they start spreading the technology into their

home life as well, and their parent or guardian begins to participate in encouraging them to use

that board for communication at home, in the grocery store, etc., it may become more of a habit

for the student, eventually causing the student to be able to independently and functionally utilize

the device no matter where they are.

The final person responsible for participating in the AT utilization process is the teacher

themselves. The teacher is the person who sees the student the most hours of the day in their

academic life. The teacher also likely has one of the heaviest influences on the student's

decision-making. If the teacher is not actively participating in using the AT that they have

advocated for, they are doing a major disservice to the student. The student could feel a

multitude of ways about their newfound technology; they could feel excited about it, worried

about how it will make them look, they could be unwilling to use it because they feel defiant

about it, etc. No one can ever predict how exactly a student will feel about needing a new device

in order to assist them in their journey towards success. If a student is feeling any type of

pushback or defiance towards the product, the teacher can prove to be of great assistance in

combating this. If the teacher actively participates in using the technology themselves, they will

be setting a good example for the student to learn from. This could encourage the student to feel

more comfortable using the technology because they have seen someone else that they,

hopefully, trust and respect use it and find success from it. The teacher should also participate

actively *with* the student in learning their new device. The student will need support, especially

in the early stages of using a piece of assistive technology; who better to help them than the teacher? The teacher's job, after all, is to teach and to promote growth and success in their student's lives. The teacher should be active in training the student in the implementation of their technology, they should be active in assisting the student in becoming acquainted with the device, and they should, of course, be active in encouraging participation with the device in all lessons and activities. This will promote the growth and development of the student and will encourage the student to find their own rhythm and flow with the device, ultimately proving to them that the device can be used how they want it and in a way that will help them achieve their greatest levels of success.

8 | Conclusion

Assistive Technology, as implemented currently in the general education classroom is sparse at best. Many teachers struggle with finding interventions for their students with disabilities that are effective. They rely excessively on the special education teacher to find devices, services and supports to assist their students. Although the special education teacher does have that knowledge and training, it should not be their job to educate their coworkers on these types of interventions. There is a particular disadvantage that general education teachers have, which is that they do not always receive the proper training to assist them in knowing how to work with their students with disabilities when they are in college. This must change, as a whole. However, in this current moment, the reality of the situation is that these teachers are simply not always trained to be effective advocates for their students receiving special education services.

In order to combat this education gap, there is a plethora of technology available, but the teachers do not have adequate training in that either. If they follow the SETT Framework, they are likely to be able to at least choose a piece of assistive technology to assist their student. However, they still may need assistance in actively implementing these devices in their classroom. That is where the C.L.A.P. Methodology can be of assistance. If teachers sincerely put in the effort to communicate their students' needs, to locate appropriate technology, as well as locate areas of strength and need for their student's technology usage, advocate passionately for their students and their students' technology needs, and participate exhaustively in the implementation process, their students are bound to find greater success both in and out of the classroom. This is a team effort that involves a myriad of people which is extraordinarily beneficial because it ensures that no one is ever left unsupported, whether it be the teacher, the

parent, the student, or any number of other school professionals. Ultimately, the C.L.A.P. Methodology is about encouraging teachers to always strive for what is best for their students. It is hard work, and there can always be complications and setbacks. However, the hope is that this methodology will assist professionals in this process and will inspire them to not become discouraged, but rather to always be seeking the next best thing for their student. No matter how many struggles come your way through the utilization of assistive technology, remember that there will always be people around to support you and that there is always a right answer to implementing appropriate assistive technology that will help your students find success, you just have to find it. Additionally, and most importantly:

Always remember to C.L.A.P. for your students.

iii | Abbreviations

AAC	Augmentative & Alternative Communication Device
AOTA	American Occupational Therapy Association
AT	Assistive Technology
BIP	Behavior Intervention Plan
C.L.A.P.	Communicate, Locate, Advocate, Participate
FBA	Functional Behavior Plan
Gen ed	General Education
IDEA	Individuals with Disabilities Education Act 2004
IEP	Individualized Education Plan
LRE	Least Restrictive Environment
OCALI	Ohio Center for Autism and Low Incidence
OT	Occupational Therapist
SETT	Student, Environment, Tasks, & Tools
SLP	Speech & Language Pathologist
Special Ed	Special Education

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