THE SETT FRAMEWORK: A MODEL FOR SELECTION AND USE OF ASSISTIVE TECHNOLOGY TOOLS AND MORE

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ABSTRACT

This chapter discusses the SETT Framework – an acronym for Student, Environments, Tasks and Tools – a decision-making tool originally designed to help collaborative teams gather and organise information that can be used to guide decisions about assistive technology (AT) devices and services that foster the educational success of students with disabilities (Zabala, 1995). Explanations and examples are provided both related to the original intent of the framework and how the principles of the SETT Framework have expanded to include not only AT but also other educational services, noneducational environments and other beneficiaries. This commentary is organised around key questions designed to foster rich conversations around the use the SETT Framework in all phases of AT service delivery to support the development of inclusive learning environments and to consider supports and services needed for staff, families and other supporters of students.

Keywords: SETT Framework; assistive technology; collaboration; decision-making; IEP development; accommodations; educators; families

INTRODUCTION

As the use of educational technology has increased and a plethora of assistive technology (AT) devices have emerged, much attention has been focussed on school districts and the procedures and practices that school personnel use in

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arriving at decisions regarding the provision of AT devices and services for students with disabilities (Banes, 2016; Bowser & Reed, 2019; Office of Educational Technology, 2017; Ohio Center for Autism and Low Incidence (OCALI), n.d.; Zabala, 1995, 2007, 2019a, 2019b, 2020). Many questions have arisen over the years and most of them are still in the forefront of conversations about the use of technology for learning by all students and the selection and use of ATs for students with disabilities. *What is AT? Who needs AT? What kind? Who decides? What data are needed to inform decisions?* Much discussion has been generated about each of these questions. Though there are few quick and easy answers to any of these questions, models that support critical thinking, concerns-identification and solution-seeking in the area of AT (Bowser & Reed, 1998; Edyburn, 2004; OCALI, n.d.; Zabala, 1995, 2019a, 2020) have identified areas that are pertinent to AT discussion. One of them is the SETT Framework – the subject of this chapter. SETT is an acronym for Student, Environments, Tasks and Tools. The type of questions outlined in the SETT provides a starting point to focus conversations about AT devices and services with students, teachers, parents and support personnel (Marino, Marino, & Shaw, 2006).

The SETT Framework is designed to help collaborative teams gather and organise information that can be used to guide decisions about services that foster the educational success of students with disabilities. Originally developed to support collaborative team work on the selection and use of AT devices and services in educational settings (Zabala, 1995, 1999a, 1999b), 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 noneducational environments and in service plans other than Individualized Education Programs (IEPs) (Vize, 2013; Zabala, 2019a, 2019b, 2020). Like the SETT Framework itself, this chapter is organised around a series of questions that will provide readers with:

- An overview of the SETT Framework that focusses on using this framework to identify systems of AT devices and services and other accommodations and supports needed by students with disabilities and includes commentary and examples for each of the four areas of the SETT Framework;
- Key questions to consider for the application of the SETT Framework to all phases of AT service delivery;
- Key questions to consider for using the SETT Framework to support the development of inclusive learning environments and
- Key questions to consider for using the SETT Framework with staff, families and other supporters of students.

ESTABLISHING THE NEED FOR THE SETT FRAMEWORK

In 1993, the National Council on Disability's report to the President and Congress of the United States estimated that 75% of children with disabilities could remain in regular classes if supplied with the appropriate AT. In addition, it

was estimated that appropriate AT could lower the level of school-related services required for the students by 45%. These were exciting figures at the time! They supported the notion that AT would radically change the school experience of students with disabilities for the better. More time would be spent in general education classes with their peers. They would be more directly involved in activities that lead to mastery of IEP goals and progress in with the general curriculum. In addition to the educational experiences of students, these figures were interesting to school leaders who were concerned about the high cost of maintaining essentially separate educational environments for students with disabilities and about the fiscal and practical issues of providing related services such as speech/language services, physical and occupational therapies and specialised transportation (National Education Association, n.d.).

Long before these figures were published, professionals dedicated to meeting the educational and life goals of students with disabilities worked to identify and provide useful AT devices with features that matched the student's needs and abilities. Decisions were made, devices acquired and training provided on operational techniques and strategies for effective use. There were high expectations that, with this approach, positive changes would occur on an increasingly regular basis. With frustrating frequency, however, what continued to be seen was students who were marginally involved and devices which were underutilised or abandoned (Phillips & Zhao, 1993).

Over the years, professionals pondered these findings along with people with disabilities, families and colleagues with a variety of personal and/or professional perspectives on the issues (Borg, Larsson, & Östergren, 2011; Scherer, 2017, 2019; Zabala, 2007). Through mutual explorations and conversations, insights began to emerge. First, even when the features of devices were well-matched to the needs and abilities of users, the devices were not always useful for working on the required or desirable tasks that occurred in the customary environments of the users. Perhaps there was a question of portability and usability in multiple environments. Perhaps teachers and others in the user's daily life were not able to provide the support needed for the student to learn to use the system effectively (Edyburn, 2004; Scherer, 2019; Zabala, 1995, 2007, 2019b; Zabala, Bowser, & Korsten, 2005). Perhaps the student did not know how to do the tasks for which the technology was needed. Perhaps the technology used by others was not compatible with the AT devices. Perhaps there were mixed attitudes and expectations on the part of people around the user of the system. There were any number of possibilities. Second, often systems were not designed to support the person in using the device for the accomplishment of tasks important to that student either personally or academically (Zabala, 1995, 2007). If a question were asked about how much time and effort anyone would put towards using a tool that did not fit the task or the environment in a useful, meaningful way, the answer for most people would be 'not much'.

Professionals, families and students began to change the conversation from what was not working to what was different when students were successfully using AT to good effect (ongoing personal communications, 1993–present). As a result of these conversations, it became increasingly clear that higher rates of

success for users and lower rates of device abandonment were occurring under at least two conditions: when AT decisions were made after careful thought was given, not only to the student but also to the context provided by the environments in which technology would be used, and the expected or desired tasks for which it would be needed (Zabala, 1995). In retrospect, it appeared to have been an obvious issue. It is difficult to choose appropriate tools if there is not a clear awareness of where and how they are intended to be used (OCALI, n.d.; Zabala, 1995).

An analogous illustration for selecting AT without first considering what it will be used for and where it will be used would be like choosing the 'best' tool at a hardware store without first considering the task that would be accomplished with that tool. Without prior planning and reflection, a wonderful saw might be selected and taken home with great pleasure, only to have its owner become disillusioned to find that the saw is of little value when hanging pictures, assembling shelves and installing new light fixtures – three tasks of great importance to the purchaser. The most wonderful saw, even one customised to its user's specific body type, strength and sawing aptitude, is not likely to help with those tasks. Prior attention to what tasks were to be accomplished with the tool would have aided greatly in the selection of a useful tool, yet, historically, AT tools were often chosen in just that way and, unfortunately, many still are (Banes, 2016; Zabala, 2019a).

The need to develop an easily communicated and understood definition of a student-centred, task-focussed, environmentally useful approach to selecting, acquiring and using AT was clear, both in research and in practice (Cook & Polgar, 2014; Scherer, 2017). It was clear that all voices needed to be heard, including those of the student, family members and various professionals. The SETT Framework was developed to support each of these needs and was shared briefly in a presentation at an international AT conference (Zabala, 1995). The following year the SETT Framework appeared in the descriptions of multiple presentations at the same conference. Over the years, along with Education Tech Points (Bowser & Reed, 1998, 2019), Quality Indicators for Assistive Technology Services (QIAT Consortium, 2005; QIAT Leadership Team, 2015) and several others (OCALI, n.d.), the SETT Framework has become one of the 'go to' frameworks for AT concerns-identification and solution-seeking (Chambers, 2019; McPherson & Blue, 2015; Vize, 2013).

AN INTRODUCTION TO THE SETT FRAMEWORK

The SETT Framework is based on the premise that to develop an appropriate system of tools (e.g., AT devices and services, other strategies, accommodations, modifications) needed for student progress, collaborative teams that include the student, family or caregivers and selected professionals must first develop a shared understanding of the student. This understanding includes the customary environments in which the student will learn and grow and the tasks that the student needs to be able to do, or learn to do, to be an active participant in the

activities that lead to educational and personal achievement (Zabala, 1995, 2005, 2019a). When the needs, abilities and interests of the student, a clear description of the environments and identification of the nature of the specific tasks required of students in those environments are explored and agreed upon, collaborative teams are able to work together to more effectively and efficiently determine what needs to be included in a system of tools that is student-centred, environmentally useful and task-focussed (Vize, 2013).

Who Is on the Team?

A student's IEP documents the decisions made about most aspects of the educational programme of a student with disabilities (Conderman, 2015). The student and the family are very important members of this team (Zabala, 1995, 2005, 2007, 2019b, 2020). Maor, Currie, and Drewry (2011) found that consumer involvement and long-term needs of consumers are critical to reducing device abandonment, a persistent problem in the use of AT devices.

Although the IEP team is the decision-making body, the team's decisions are informed by input and recommendations from members of a flexible, multi-disciplinary AT team that also includes the student, family and educational and related services professionals who have knowledge of the student's special needs. This team may also include other people who are significantly involved in the student's life and well-being such as medical personnel and peers. In addition to the student and the family who are members of both teams, when possible, a professional member with knowledge of AT should also be on the IEP team to assist the IEP team with understanding how recommended tools and strategies were selected and how they are to be used (Bowser & Reed, 1998, 2019; Castellani et al., 2004; QIAT Consortium, 2005; QIAT Leadership Team, 2015; Zabala, 2007, 2019a, 2019b).

How Does the Team Get Started?

The team comes together with a common interest in the personal and educational achievement of the student and enter into a conversation designed to align the thoughts of all team members on how to best foster the student's achievement (Scherer, 2017). The student is always at the centre of the conversation and has an active voice throughout. Every team member comes to the table with their own perspective on the student's needs and abilities and their own ideas about how the student's needs might best be met. Every team member has knowledge, skill, observations, ideas and suggestions that are important to the discussion. Although everyone is an advocate for the student's progress, there are often varied opinions on how to support that progress. Multiple perspectives are vital to a rich conversation, but they can also be messy.

If teams are able to see differences of opinion as opportunities to learn and understand the perspectives of others and are able to commit to keeping the conversation respectful rather than confrontational, the work will be more fruitful (Marino et al., 2006; Zabala, 2020). It has been found that the time and

energy invested in working together towards a shared understanding of the student, the environments in which the student spends time and the tasks that are a part of those environments pay off not only in the selection of devices and services that the student needs but also in the use of devices and the implementation of services (QIAT Consortium, 2005; QIAT Leadership Team, 2015; Zabala, 2007). The SETT Framework provides the team with a series of questions that enable them to move towards that shared vision (Zabala, 1995, 2005).

What Questions Does the Team Ask in Each Section of the SETT Framework?

As playwright Eugene Ionesco (n.d.) said, 'It's not the answer that enlightens, but the question'. This statement is true of the questions in the SETT Framework as they are expected to guide and deepen discussion rather than be complete and comprehensive in and of themselves. As each question is explored, it is likely that many other questions will arise. The team continues the exploration until there is consensus that there is enough shared knowledge to make informed, reasonable decisions that can be supported by data. While some teams bring enough shared knowledge to made decisions during a first meeting, many teams require more information to make informed decisions.

As team members explore and contribute to these questions, there are two things to keep in mind. First, although the areas and question are written in a linear order, it is not expected that they will be talked about in that order. The only order that is important, when using the SETT Framework, is that the Student, Environments and Tasks be explored *before* moving to the consideration and selection of Tools. Once a tool (device) enters into the discussion, it changes the discussion to whether or not the tool is a 'good' one. If this happens too early, whether the mentioned tool is 'good' or not, will be based on conjecture or preconceived notions rather than data that have been gathered during the discussion. Second, as the team works towards the development of a shared understanding of the student, the environments and tasks, they will want to determine what they know, what they still need to know and how they can find out. Should an evaluation be needed, what the team needs to find out will define the scope of the evaluation and the evaluation activities. Thus, it is important that teams have this conversation before an AT evaluation (Bowser & Reed, 2019; QIAT, 2014; Zabala, 2005, 2007, 2019a).

The Student

When considering a student's strengths and needs, there are some key questions to get the team's discussion started. These questions include:

- What is(are) the functional area(s) of concern? *What does the student need to be able to do that is difficult or impossible to do independently at this time?*
- What are the student's special needs? (related to area of concern)
- What are the student's current abilities? (related to area of concern)
- What are the student's interests and preferences?
- What are the student's expectations and concerns?

Building shared knowledge about the student starts with the student's thoughts first, then adding the thoughts of others in a respectful manner. The questions are intentionally broad, so that they do not preclude anyone's participation or any possible solutions at the outset. These few questions may yield a great deal of data, partly from the discussion and partly because previous information that has been gathered may be useful in this discussion. However, it must be kept in mind that *all* data on a student are not pertinent to choosing and using AT. Meaningful issues must be identified specifically by and for each individual student (e.g., not necessarily the student's disability category, but the impact of the disability on the student's function, how the student currently deals with concerns, student's strengths that can be built upon, student's short- and long-term perceptions and goals).

When addressing what the student needs to be able to do, teams consider the full range of human function that may be concerns for the student, not just those functions specifically related to academics. Assistive technology is related to function, so broad functions such as talk, write, move about or see are appropriate at this time. Later, in the Tasks section, these issues will be explored more deeply, as it would be useless to pursue options for 'moving about', for example, if there were not some deeper description of what the tasks of 'moving about' look like in the student's customary environments. The primary goal of this question is to invite active, nonjudgmental sharing to begin to establish consensus among group members about what it is really important for this student to be able to do (QIAT, 2014; Zabala, 1995, 2004, 2019b; Zabala & Bowser, 2005; Zabala et al., 2005).

These questions are designed to generate conversation about the student's current abilities, interests and short-term and long-term expectations as well as the barriers encountered in various environments. It is important to keep in mind that, no matter how great the needs, every student has abilities that can be built upon and enhanced, not necessarily replaced.

The Environments

There are many different environments in which people interact on a daily basis. When examining the environments for the student, the following questions will assist in starting the discussion.

- What is the arrangement of the environment(s)? (instructional, physical)
- What support is available in the environment(s)? (available to both the student and the staff)
- What materials and equipment are available in the environment(s)? (commonly used by others in the environments)
- Are there any access issues for the student or staff? (technological, physical, instructional)
- What attitudes and expectations are placed on the student in the environment(s)? (staff, family, other)

All students spend their days in multiple environments. No student exists in only one environment. Even the rare person who operates primarily in one

location experiences a multitude of influences which can greatly alter that single environment from moment to moment. In school environments, there are profound differences among the environments in which students spend their days. Classrooms – even a single classroom – vary at different hours of the day. The playground, the cafeteria, the hallway, the bus stop and a variety of other environments a student experiences during a typical day are important to the participation and achievement of the student. Add to these the home and the community, the complexity of choosing and using a system of AT tools that will be environmentally useful for a student can become daunting.

It is essential that decision-makers build a shared description of the barriers and supports available in the student's typical environments. The barriers that a student encounters are generally much more related to the environments than they are to the student. Although a student's condition may remain constant, the condition only becomes a disability when the demands of the environments exceed the student's current functional ability to respond to those demands (Meyer, Rose, & Gordon, 2014).

Educational environments that are proactively designed to be inclusive spaces where all children can learn and grow are very different from those that are not (Meyer et al., 2014). Environments that are proactively planned to be inclusive – discussed in greater detail later – are more likely to have identified and lowered many barriers students face by ensuring that goals are written in language that does not include one specific means for accomplishing the goals, methodology that is variable and builds on student engagement and materials that are flexible and useable by the greatest possible number of students with and without AT. When working towards a common understanding of the environments in which students spend their time, the extent to which all factors in environments are accessible to the student is a big part of the discussion. A useful description includes much more than placements (e.g., general education classes, self-contained classes, essentially separate campuses) and instructional levels (e.g., grade levels). Descriptions include many other aspects of the environments such as number of students, supports available to the adult(s), the kind of materials and technologies that are available and accessibility issues related to instruction, use of technology and the physical arrangement (Zabala, 1995, 2005, 2019b).

For example, the physical arrangements of the environments are important when considering a mobility system that must be used in a crowded hallway, in a classroom with close-set rows of desks, on a sand- and grass-covered playground and in a bus that currently has no lift system. Each of these aspects must be included in the description of the environments so that when the team is ready to consider the components of a functional mobility system for a student, they understand where and how the system will need to function. Environmental issues like those mentioned do not mean that something like power mobility would not be considered. They just mean that, in order for power mobility to be functional in these environments, they will explore several issues, such as identifying a lift system for the bus, some assistance for the teacher in arranging the classroom space, training for the student and others on how to manage crowded situations

and possible alternatives in scheduling so that the student might avoid the halls at the most crowded moments. These considerations should be a part of the initial system design, for without them, the system may not meet expectations and may be abandoned in favour of other strategies which, though practical for the moment, may provide fewer opportunities for the student to build independence (Bowser & Reed, 1998, 2019; QIAT, 2014; Zabala, 1995).

Finally, being aware of the attitudes and expectations of the adults who surround the student may be more critical than any other aspect of the environment because these have far-reaching influences on everything else. The attitudes and expectations of educators and families have much to do with the learning opportunities that are provided to students. They may include attitudes about what they believe the student is able to learn and do which influences ways students are encouraged (or discouraged), the kind of materials and technologies made available and the range of strategies offered to engage and support the student who may perceive, process and respond in ways that may be somewhat different.

Attitudes and expectations are keys to environments. They impact how environments are arranged, how materials and technologies are made available and so much more. Exploration of the attitudes of those around the student is rich with opportunities to invite growth and, yet, fraught with the potential for disaster. Attitudinal differences must not only be recognised but also be dealt with in inviting ways that promote opportunities for all to grow so that the adults closest to the student are motivated to work together to create learning environments in which every student has the opportunity to learn and grow (Zabala, 1995, 2005, 2019a, 2019b, 2020).

An example of the importance of expectations can be seen when examining the attitudes and activities of a typical teacher of 6-year-old students. Generally, the teacher would expect that, over the course of years, all students would acquire the skills needed to participate fully in adult society. The expectation is that each student would be able to attend college, learn a trade and engage in whatever activities they chose in order to be productive and happy adults. With this expectation in mind, learning environments would be designed to provide numerous opportunities for students to build age-appropriate skills that would enable them to learn and grow towards maturity. For example, that teacher of 6-year-old students would view literacy as a primary focus for all students and would design a classroom setup and activities to reflect this focus. Opportunities to build literacy skills would be woven throughout the day, regardless of the subject matter being taught. Literacy would never be confined to one period of the day or one circumstance. It is far too important for that.

What if, however, there had been some reason to suspect that among the students were some for whom higher education and adult productivity would be difficult or impossible? Would the teacher work long and hard at developing literacy skills for those students if it looked highly unlikely that those students would master the art of giving and receiving information in written form? Would the teacher take the time and make the effort to provide a print rich environment

as well as the specialised formats some students would need and draw attention to their use at every possible moment? Though we would like to think that she would have, this might not have been likely. Instead the teacher may have selected more 'meaningful' and 'attainable' goals for these students and given the development of literacy a lower priority than 'more appropriate' goals. Should this occur, the teacher would have failed to offer the invitations and experiences that were needed by all students to develop literacy skills. Therefore, whether students in the subgroup were capable of learning to read and write or not, they would not have been provided with equal opportunities to learn to do so. The teacher's lowered expectations would have led to fewer opportunities for some students to master literacy skills (Zabala, 2005).

The Tasks

Within a classroom, at home and in the community, there are many tasks that people perform on a daily basis. These tasks include elements of daily living, academics, social interaction and communication. The questions that assist in focussing the team to identify tasks relative to the individual student include the following:

- What *specific* tasks occur in the student's natural environments that enable progress towards mastery of IEP goals and objectives?
- What *specific* tasks does a student need to be able to do to be personally and academically involved in identified environments? (related to areas of concern such as interactive communication, participation, instruction, environmental control and autonomy)

To be clear, tasks are not goals. Tasks are what needs to be done to enable students to be actively involved in learning environments and to build skills and move towards mastery of academic and personal goals. If there are no tasks that the student is expected to do or learn to do, then AT tools are not likely to have a positive impact because it is not clear what the tools are expected to help the student achieve. AT is just a means to participate in activities which offer the opportunity to build knowledge and skills. As might have been the case in the classroom of 6-year-old students mentioned earlier, if there were no tasks that provided meaningful practice, mastery could not possibly be expected.

When considering tasks, it is usually helpful to begin with thinking about what 'everybody else is doing'. Participating in the same activities does not always lead to the same result for all participants. For example, in an inclusive environment, there may be a student with significant cognitive disabilities whose goals include categorising, task completion, turn-taking, seeking help when needed and grasping and releasing items appropriately. There is little reason for this student to work on these tasks in isolation. Tasks that lead towards mastery of most of these goals could be addressed by working with fellow students, for example, on an earth science project involving classifying, sorting and charting various kinds of rocks and the ways in which they were formed. The actual

items that would be monitored and measured for mastery would be different for this student, but the tasks would be pretty much what 'everybody else is doing'. When necessary, certainly move away from 'what everybody else is doing' if those tasks are not pertinent to the student's IEP, but first determine that it is really necessary. As the activities in various environments are considered, teams remember that tasks (or activities) are not isolated skills, but clusters of skills which must be used together for students to participate in activities that enable them to learn and grow (Calculator, 2009). It is difficult to think of any activity in which participants use skills in only one area – motor, social/emotional, communicative or cognitive.

When considering tasks, the team may use the SETT Framework to consider not only AT specific to the student but also environmental and activity accommodations that can increase participation for students with disabilities while not changing the critical elements of the activity for any student. A useful example that supports consideration of critical elements is a frequent preschool and early elementary activity – Musical Chairs. For most people, when asked to quickly name two critical elements in the game of Musical Chairs, *music* and *chairs* come to mind. However, consider the possibility that a student in the classroom uses a power wheelchair. That student's goals may include learning to safely manipulate the wheelchair in crowded situations. A savvy teacher could make an accommodation in the game so that the student in the wheelchair could play and also have lots of opportunity to work towards mastery of his wheelchair operation goal while having fun with the other students. To accomplish this dual purpose, chairs were replaced by mats on the floor. This was the only change made in the game and everyone played as before with one exception – the student using the wheelchair played right along with everyone else. Chairs were traded for mats, but, as that accommodation did not significantly change the action of any of the students, it would be safe to say that *chairs* are not a critical element of Musical Chairs. If a student who was deaf were also in the class, it would be an easy accommodation to add a light that lit up whenever the music played and faded when the music stopped – there are apps for that! With this accommodation, a student who was unable to hear the music could participate fully in the activity. And what would happen if, when the music was started, it was accidently muted so only the light flashed? As might be expected, all of the students would most likely march around the mats while calling for the music to be unmuted. Thus, in this example, chairs and music are not the critical elements of Musical Chairs, but rather are incidental examples of two critical elements: (1) identified spots where students land with one less spot than there are students and (2) a perceivable signal which indicates when to start moving and when to stop.

The Musical Chairs example, though aimed at a simple activity, provides more opportunity for concerns-identification and solution-seeking than would have been possible if action had been taken on what is now seen as inaccurate conclusions. Thus, this illustration does not lead towards the assumption that this applies only to the games of young children, it is helpful for teams to take some time to explore the critical elements of a more complex activity such as writing a

term paper and what sort of tools (e.g., devices, accommodations) enable participation and productivity by a student with severe dysgraphia.

Most tasks (activities) contain a multitude of steps. Once the steps have been identified, it is possible to look at what elements of the tasks would be difficult or impossible for a student to do as independently as possible. At that point it is possible to begin developing a system of tools which could be used to address those elements of difficulty. In order to focus interventions on barriers which need to be removed, the barriers must be clearly identified. Just as it is necessary to work to provide tools which lower barriers, it is important not to spend a student's precious time and energy on elements where barriers do not exist.

Linking the Student, Environments and Tasks to the Tools

Basically, the questions about the student, the environments and the tasks are the data gathering questions. When addressing these questions, it is not uncommon for more than one view of the student, the environments and/or tasks to come forth in the discussion. Perhaps the student has given up on herself/himself as a learner while others see opportunities for progress. It is not uncommon for team members to have differing perspective and contributions on the environments and tasks, as well. It requires time and effort to move towards consensus on which observations are assumptions and which are based on observable data. However, without working towards a common view which can be supported – or at least not undermined – by all members of the team, it is unlikely that alignment in system selection and intervention design can occur.

After the initial data gathering has been sufficient to begin to move forward, the data analysis phase begins. At this point, it is possible to see the potential impact on the inclusion of AT tools and strategies on the student's ability to communicate, participate and be productive in educational and life tasks in the environments in which they learn, live and grow. A useful question that helps the team move from exploration of the student (the who), the environments (the where) and tasks (the what) to thinking about the tools (the how) is 'If there were something out there that would help Jane do what she needs to do when and where she needs to do it, what would it be like?' At this point, that question is more useful than 'What features would tools need to have?' because it enables people who think they do not know anything about the features of tools to participate in a description of what is needed. When there is an agreed-upon description of what is needed, it is possible to align that description to potential devices that will be useful to the student (Zabala, 2007, 2019a, 2020).

Choosing the Tools

Finally, the SETT Framework addresses the area where most people would like to begin. However, if a team has used the SETT Framework to arrive at this point, they begin with a clearer understanding of what tools should be sought that address not only the student's needs and abilities but also the tasks for which

tools will be used in the student's customary environments. Teams are then more prepared to seek tools with a clear idea of who is going to use them, where and for what (QIAT Consortium 2005; QIAT Leadership Team, 2015; Zabala, 1995, 2007, 2019b).

In the SETT Framework, tools include whatever is needed by the student and others for the student to accomplish the tasks in the places where they need to be done so that progress is achieved. Some parts of the tool system address the specific needs of the student and may include devices, services, strategies, training, accommodations and modifications – everything that is needed for the student to be actively involved in the activities of learning, living and growing. Other parts of the tool system may more specifically address issues in the environments, such as access to the classroom, accessibility of instructional materials and support for staff that helps them develop and sustain learning environments that are inviting, challenging and productive for *all* students, including those with disabilities. In addition, parts of the system of tools may provide supports for professionals and family members so that they can best understand and support the student in the use of AT. This may include training and support on device integration, strategies for implementation, decision-making, accommodation and modifications, device operation and more.

As the features of a workable system of tools are sought, team members keep in mind that tools are not just things – they are both devices and services. They are 'no-tech' strategies as well as low-tech and high-tech devices and supports. They comprise a system of tools working in combination to assist a student in moving forward. More often than realised – even when ongoing training has been provided – an AT device may fail to meet expectations because some part of a workable system is missing. For example, there is no extension cord available when the battery runs low and the power source cannot reach the outlet without moving the student to an isolated corner of the room. In a well-thought-out system in which the environments were considered, the extension cord would have been included in the system of tools.

Device Selection and Use

As many people have requested examples of how the SETT Framework fits into various processes, brief guides and forms have been developed to provide a place to begin. Those guides and forms are known as SETT Scaffolds (Zabala, 1999a, 1999b). They are specific to steps for the selection of tools and for using and evaluating the effectiveness of tools. In the building trade, a scaffold is used to support the integrity of a structure while it is being developed and also to provide access to harder-to-reach parts of the structure. The SETT Scaffolds have a similar purpose. They provide teams with a place to begin and support the building of strong processes that are imbedded in or aligned to other processes that suit specific environments. During the development of personalised processes, the SETT Scaffolds help teams remember and attend to issues that might be missed without guidance. The SETT Scaffolds are readily available for download, use and customisation at http://joyzabala.com.

It is important to note that SETT is a framework, not a protocol that requires a specific set of implementation practices for validity. It is important, however, to keep in mind that consistent processes are important for effective implementation: therefore, people are encouraged to imbed the use of the SETT Framework into existing processes (such as referral, IEP development, implementation planning, evaluation, etc.) or include it in the development of new, more effective processes when required.

Time Required to Use the SETT Framework

The beauty of any framework is that it can be adjusted easily to fit the situations in which it is used. In the case of the SETT Framework, if a student's needs are easily identified and met and the whole team feels comfortable going forward, it may take very little time. If a student's needs are complex or involve multiple functional areas, it could take significant time and effort to try out and identify a useful system of tools. If the members of the team have a hard time agreeing, it may also take longer to go carefully through all of the steps. The time involved is different for every student and every team. When the question of time comes up, as it often does, it can be helpful to reflect those situations in which teams have met over and over because they have not been able to identify an effective system of tools to help a student do what needs to be done where and when it needs to be done. When that time is spent in collaborative proactive planning and decision-making, it is more likely that the resulting system will be more student-centred, task-focussed and environmentally useful. What is gained with the proactive approach is more student learning time – time which is irretrievable once lost by failing to identify a useful system in the first place. This is not to say that there will not be a need to tweak or make changes, but it will usually not mean starting over.

USING THE SETT FRAMEWORK ACROSS ALL ASSISTIVE TECHNOLOGY SERVICES

In the previous section, the focus was on the use of the SETT Framework for its original purpose, supporting collaborative teams in the selection of AT devices and services. This section focusses on the eight areas of AT service delivery included in the Quality Indicators for Assistive Technology (QIAT Consortium, 2005; QIAT Leadership Team, 2015; Zabala, 2007; Zabala & Carl, 2005). Key questions in each area highlight how the SETT Framework can be useful across the full span of AT service delivery. Note that, as mentioned earlier, the order in which the key questions appear do not necessarily reflect the order of the letters in SETT. The most important thing is that discussion of the student, environments and task comes before trying to identify the system of tools that are needed. The key questions that would be asked in regard to consideration, assessment, inclusion in an IEP/plan, implementation, evaluation and transition are provided in Table 1.

Table 1. Key Questions for Using SETT Framework across All Assistive Technology Services.

Area	Questions
Consideration	• Does this *Student* need AT *Tools* (devices and services) to accomplish the *Tasks* needed to make progress towards mastery of established goals across *Environments*?
Assessment	• What areas of concern about the *Student* will be addressed? • How does the student currently function in the customary *Environments*? • For which *Tasks* will the student need Tools? Under what conditions? • What features of *Tools* – devices and services – are identified as needed by the student and others?
Inclusion in an IEP/plan	• Are the *Student's* goals and objectives sufficiently robust to provide the opportunity for academic, extracurricular and personal growth? • Is there a clear connection between the student's goals, the *Tasks* that will enable the student to work towards the goals and the *Tools* – including but not limited to AT – that will be used to accomplish the tasks and make progress towards the goals? • How will support be provided across *Environments*? What training and support will be provided to educators and families who will support the student?
Implementation	• Are the *Student* and those closest to the student full partners in implementation planning? • How will the tools be integrated into the student's programme across *Environments*? How will support be provided across environments? • For which *Tasks* will the student need the Tools? Under what conditions? • Who will ensure that the *Tools* are available when and where needed? *Teaching? Technology? Training? Accommodations? Modifications?*
Evaluation of effectiveness	• Do data indicate that the *Student* is making progress as expected? If not, why not? • Are there factors in *Environments* that impede progress? • Does the student know how to do the *Tasks* for which the technology is intended? • Have all of the required *Tools* been made available and supported when needed? *Teaching? Technology? Training? Accommodations? Modifications?*
Transition	• How are next *Environments* similar to and different from current environments? • What *Tasks* will be expected of the *Student* in next environments? • Will the *Tools* the student is currently using be available, maintained and supported in the next environment(s)? If not, what alternatives will be in place so that the student continues to be communicative, participative and productive in the next environment(s)? • How will the *Student* be prepared for the next *Environment(s)*?

USING THE SETT FRAMEWORK IN INCLUSIVE LEARNING ENVIRONMENTS

One of the foremost reasons why persons with disabilities struggle with technology is that the designed environments, including schools, have traditionally been primarily designed for 'average' users (Carey, 2016; Meyer et al., 2014). This section focusses on the use of the SETT Framework in collaboration with other initiatives that help educators develop and sustain inclusive learning

environments, specifically Universal Design for Learning (UDL) (CAST, 2019; Rose, Hasselbring, Stahl, & Zabala, 2005), although there are certainly others. When goals, assessment, methods and materials are proactively designed and delivered according to the principles and practices of UDL, barriers to learning are identified and lowered for most learners, but there are learners with more intensive support needs who continue to require additional supports and services beyond those provided to everyone (Rappolt-Schlichtmann, Daley, & Rose, 2012). Building on the firm foundation of UDL enables concentration on identifying and lowering barriers that some learners with more intensive support needs continue to experience and enable educators connect with others to ensure that practical strategies, services and supports – including but not limited to AT and accessible educational materials – are available and used to level the learning field and extend the benefits of UDL to every student. Key questions in this area include the following:

- Who could be our *Students*? What variability should we expect?
- What are the *Environments* in which our students are expected to learn and grow like? Consider barriers and facilitators.
- What *Tasks* will our students need to be able to due to be active learners and reach goals?
- What *Tools* will be needed to build inclusive environments that support the learning of *all* students?

USING THE SETT FRAMEWORK FOR STAFF, FAMILY AND OTHER STUDENT SUPPORTERS

Although the SETT Framework is most typically used for student services, it is also a powerful way to guide the effective needs of assessment and planning for staff members, families and other who support the students. By thinking carefully about the needs and abilities of staff and supporters and their typical responsibilities within the environments in which the student is expected to use the AT, and the tasks that staff and supporters will be called upon to support the student, it is possible to identify the tools – supports, training, technical assistance, additional devices, etc. – that they need to be successful (Zabala, 2007, 2019a; Zabala & Bowser, 2005).

CRITICAL ELEMENTS OF THE SETT FRAMEWORK?

Although there is a historic emphasis on the use of the SETT Framework as a tool for selecting and using AT devices, it is useful during all phases of AT service delivery and beyond. With that in mind, revisiting the SETT Framework information periodically helps to keep information that is guiding decision-making and implementation accurate, up to date and clearly reflective of the shared knowledge of all involved (Zabala et al., 2005).

In addition to its historic purpose of collaborative decision-making about selection, acquisition and use of technology for an individual student, it is also useful to assist with building proactive learning environments for all students or as a way to address the needs of educators and families (Zabala, Bowser, & Korsten, 2005). The way it is being used will vary based on its purpose and the particular challenges and facilitators within the environments in which it is being used. Regardless, there are some critical elements that must *always* be included (Zabala, 2005, 2019a, 2019b). They are listed as follows:

- *Shared knowledge*: One of the major premises of the SETT Framework is that decisions about Tools – the devices and actions that are needed for the student and others to succeed – are most valid when they are made based not on the knowledge that one person has (or believes that they have) but based on an agreed-upon, mutually valid shared knowledge of the student, the environments and the task.
- *Collaboration*: The SETT Framework is a tool that both requires and supports the collaboration of the people who will be involved in the decision-making and those who will be impacted by the decisions. Collaboration is not only critical for the SETT Framework; it is also critical to gaining the engagement necessary for effective implementation of any decisions.
- *Communication*: The SETT Framework requires that people communicate actively and respectfully. Shared knowledge can only be developed if the opinions, ideas, observations and suggestions are respected and respectful.
- *Multiple perspectives*: Everyone involved brings different knowledge, skills, experience and ideas to the table. Although multiple perspectives can be challenging at times, they are critical to the development of the accurate, complete development of shared knowledge. Not only are the multiple professional perspectives important to include, but also those of the student and the parents. This can make the difference between success and lack thereof.
- *Pertinent information*: Although there is much information that is pertinent to decision-making, there is other information that is not relevant. Knowing where to draw the line is important, but that line may well be a moving target.
- *Flexibility and patience*: When working through the SETT Framework or using any other means of concerns-identification and solution-seeking, there is a tremendous human tendency to suggest possible solutions before the concerns have been adequately identified. When a solution springs to mind, collaborators are urged *not* to voice it until it is time to talk about the Tools because when a solution is mentioned, the conversation shifts immediately from concern-identification to determining the worth or lack of worth of the suggested solution. Even when a team member thinks of the 'perfect' solution, silent patience is urged. It might not look quite so perfect when all important factors are discussed.
- *Ongoing processes*: Decision-making in educational settings involves ongoing processes. Whatever conclusions reached at any point are only as valid as the evidence shows they have been successful in lowering barriers to student achievement.

Although there is a historic emphasis on the use of the SETT Framework as a tool for selecting and using AT devices, it is useful during all phases of AT service delivery and beyond. With that in mind, revisiting the SETT Framework information periodically helps to keep information that is guiding decision-making and implementation accurate, up to date and clearly reflective of the shared knowledge of all involved.

CONCLUSION

The SETT Framework is not static. It is a way of thinking, a way of acting, a way to encourage collaboration, a way to engage others, a way to lower the chances of abandonment and an iterative, ongoing process (see Fig. 1). The SETT Framework promotes collaboration and engagement by using clearly understood language, requiring broad-based participation by all involved at any step of the selection, acquisition and use of AT and other supports, services and training. It encourages and values all perspectives.

As data are organised and prioritised within the SETT Framework, it promotes logical thinking by all team members and can be an effective consensus-building tool. As environments and tasks are explored, the links between assessment and intervention become strong and clear, as does the need to develop a system of tools which will enhance the student's abilities to address the tasks in which he/she is expected to build competency. In addition to developing a system of tools valuable to the student, participating in a process using the SETT Framework increases the likelihood that the people supporting the student will see the relevancy of the technology and will be more active and persistent in encouraging and supporting the student's achievement through its use.

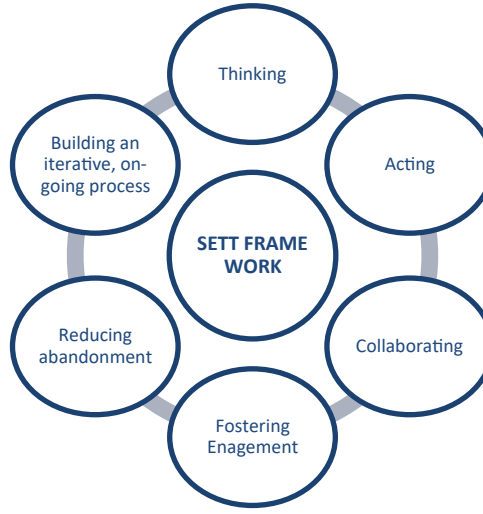

Fig. 1. The SETT Framework as a Continual Process.

Using the SETT Framework as a guide, it is possible, from the start, to address and overcome many of the obstacles which lead to marginal student inclusion, general dissatisfaction and device abandonment. When the Student, the Environment and the Tasks are fully explored and understood, concerns like 'Well, the device is here, now what do I do with it?' or 'He has it, but he won't use it!' are less often heard. Instead, students, parents and professionals are able to work together to ensure that the student has increased opportunities for mastering tasks through the use of AT systems that are well matched to the student's needs and abilities and support active participation in activities that are part of living and learning in this world.

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