Case Study: Jack and SETT

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The SETT (Student, Environment, Tasks, and Tools) model is a framework for educators and parents to make decisions about assistive technology for individuals with special needs as it pertains to their educational growth. The SETT model was introduced in 1994 at the Closing the Gap Conference and has been a prevalent force in the world of assistive technology (AT) and education ever since (Zabala, 1995). SETT is a great way to create and manage personalized AT programs for individuals with needs as the framework resembles practices which are already in place in the education system already such as the IEP team meeting process. The major difference is that SETT focuses on specific AT needs and applications to meet the needs of students in regular classrooms while the IEP discusses the whole child and looks for both needs in inclusion and in individualized settings. The Virginia Department of Education (2008) states “The *SETT Framework* simplifies the task of making assistive technology decisions by providing a tool for organization of the information gathered and questions to lead the decision-making process” (p.10).

Within the SETT model, each member of a team is responsible for building a detailed profile of the student in need. The team then comes together to discuss their thoughts and observations in order to decide what actions could best serve to increase the positive educational experience of the student in a specific environment. The tasks which the student will be performing are also observed and discussed by the team and the types of AT needed to perform each task is considered carefully by the team so that the tools needed to perform each task in the observed environment can be acquired, built, or written by the team (Zabala, 1995).

The SETT model was chosen as the framework of choice for this case study because it most closely resembles Texas’s current IEP practices in which AT is discussed and eventually procured. However, the IEP team meetings are not comprehensive when it comes to the full scope of the environments and tasks the student will be performing. Therefore, the practiced use of and reporting of a SETT based case study would be most useful for advancing the cause of appropriating and supporting effective AT practices at Harmony Public Schools.

To begin the case study it is important to understand the student subject. Student is after all the first part of the SETT model. Therefore, the construction of a student profile using the SETT framework provided in Zabala (1999). The following questions are the basis of the profile being used to begin the data mining process. However, it is important to realize that this case study will lack an integral part of the SETT framework: the individualized observation and discussion by multiple teachers who interact with the student. The team aspect of the SETT model makes it an effect way to make AT decisions effectively and confidently.

**The Collection of Data and the Profile**

Collecting data is the beginning of the SETT framework. The graphic below was borrowed from the Zabala (2001) website and was helpful for collecting the first round of data for a basic student profile. The SETT process is recursive, just like the IEP, and allows for multiple meetings of the team to clarify, solidify, and execute newer and better plans for procuring and using AT devices. This is a mock version of what a profile would look like for Jack, a 6th grade student who attended Harmony Science Academy Dallas last year.

[[1]](#footnote-1) **THE SETT FRAMEWORK - PART I**

**Collaborative Consideration of Student Need for Assistive Technology Devices and Services**

1. **Student:** Jack **Date/Staff:Start of SETT: 8/06/12**
2. **Meeting** not applicable-building profile**:** English teacher/all others not available for consult at this time

*Directions for this page: In the area of Student address: What is the functional area(s) of concern? Special needs, Current abilities; In the area of Environment address: Arrangement, Support. Materials and Equipment, Access Issues, Attitudes and Expectations; In the area of Tasks address: What specific tasks are required for active involvement in identified environments? Circle areas which present barriers to student progress*

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| What we know | Student: What are the student’s strengths and needs? | Environment: classes and situations where help is needed? | Tasks: What are the tasks that the student needs to be able to accomplish to meet IEP goals? | TOOLS: What AT or services will address these tasks? |
| * 6th grade student * Superior canal dehiscence (caused deafness at birth) * Can read lips * Communicates through combination of notes and short sentences/drawings (no longer has translator) * Extreme dyslexia * Extreme dysgraphia * Student has short term and long term memory problems * Takes 20 mg Aderol extended release * Problems focusing on any problem for more than 2 minutes * Loves to draw and is very interested in art * Extremely motivated by external factors such as additional time outside and special privileges like class monitor * Cannot read for extended periods of time * Cannot write-handwriting completely illegible * Socially well-adjusted and makes friends easily * Very polite, well-mannered towards teachers * Has a little sister with no diagnoses * Mother appears to be overbearing and makes excuses for his lack of motivation by defending the fact that he has ADHD-disregards deafness as a cause of lack of motivation * Has a IEP plan as 504 was not sufficient * Accommodations and Modifications include extended time, no points off for spelling or punctuation, rubric shortened and graded for completion and simplified understanding * Uses iPad with TTS app to change speech to text to combine with lip reading | * Attends Harmony Science Academy Dallas * Attends Science (6hrs), Math (6hrs), English Language Arts and Reading (7hrs), Social Studies(5hrs), Spanish (3hrs), Health Education (2hrs), and Physical Education (3hrs) and Arts enrichment (3hrs) * All classes are completely inclusive with no pull outs or 1 on 1 aides * Reading and writing workshops are especially difficult and create great frustration * Group work tends to help him focus for short periods of time-but he gets frustrated when students don’t understand his speech * Limited access to technology in the classroom may inhibit his use of prospective AT devices * Classrooms are small and are not wired for a great deal of technology * 26 students per classroom maximum * 45 minute periods | * Express thoughts and emotions verbally (forming audible sentences) and in writing-journaling * Read for sustained period of time (5-10 minutes) and comprehend reading * Write alphabet in clear and legible manner * Spell grade level words with fewer inconsistencies | * Interactive dictionary for spelling assistance * Tablet with Feedback Pen and Smart Stencil * Cornerstones program * Added time for completion of shorter tasks * Kurzweil 3000 with text to sign? (the apparent lack of text to sign language software perplexes me, text to speech would not benefit Jack unless there were a program designed to do this) * EnableTalk gloves-prototype is now in production, may be available within the year |
| What we need to know | Would assistive reading devices benefit his reading issue?  Have his modifications altered his motivation to attempt new learning?  Does Aderol pose a risk for operating any AT devices?  Which factor plays the largest role in his difficulties ADHD or deafness? | What classes could create a restrictive environment that may prevent the use of some AT devices? | What tasks can be assisted by technology better than by adult input?  How can note-taking strategies improve through AT? | How well does she interact with computers?  Are the devices worth the investment in terms of the return they could have for his education?  What training would be necessary for him and his teachers? |

**Brain Research and Using the Profile**

The SETT framework is steeped in brain research and in fact supports the basic ideas that define brain research, in the words of Rose & Meyer (2002), “The fundamental nature of the recognition, strategic, and affective networks form a framework we can use to analyze our students' individual strengths and weaknesses and understand their individual differences” (ch.2 p.1). SETT is nothing more than a tool for the analysis of student strengths and weaknesses.

The recognition networks are like a net that grab onto things as they pass through our brains and keep them in the right places. Rose & Meyer (2002) describe this as the “what” of learning. The SETT framework supports the use of recognition networks in both teachers and students. Teachers are observing and categorizing elements of the student, the environment, and the stimuli that students will be absorbing on a daily basis and building a catalog of characteristics for each. The “what” teachers are learning about is: “who is my student?” Simultaneously, teachers are considering the “what” of the student’s learning. What will the student be doing? What things will he be processing? Where will all this be happening? This input will allow teachers to decide what changes need to be made in the tools that help present information to students so that they are most effective.

Jack is a middle school student who will be learning primarily in a reading and writing workshop setting in his English class. He will be focusing on learning to express his thoughts and emotions verbally (forming audible sentences) and in writing/journaling, to read for a sustained period of time (5-10 minutes) and to comprehend what he read, to write the English alphabet in a clear and legible manner, and to spell grade level words with fewer inconsistencies. He will observe modeled reading and writing strategies in an inclusion setting (28 students maximum) with no 1 on 1 support other than his group members and teacher conferences. Information needs to be presented to Jack in a way that is visually stimulating and interesting enough to maintain his attention. The reading level of said texts should be at or well below Jack’s current grade level so that he does not hover in the frustration zone. Graphic novels, or other illustrated books should serve well to present information to Jack.

Brain networks do not stop at the recognition stage. The strategic network of the brain controls the “how” part of learning. This network is where student individuality really begins to shine through. Although what students learn is mostly identical, each student has unique capabilities and expresses mastery of what is absorbed in different ways. The SETT framework takes this into consideration as teachers will also observe what kind of learner the student is, and how he expresses himself best. The beauty of the SETT framework is that it allows for multiple points of view to be melded into a common solution. The solution will determine what kinds of differentiation can be used and what tools will aid in the differentiation of both processing information and expressing the learned outcomes. Some students may be more apt at writing essay responses, while others are better at drawing graphic/non-verbal representations of the same information. Teachers will use the SETT framework to decide what function the student prefers to use to express his learning so that it can be assessed.

Jack expresses himself best by signing and drawing. He has been known to draw in inappropriate places, such as on desks and walls. It may serve well to redirect that behavior by allowing him to express his learning through drawing and then interpreting it through sign.

The affective network of the brain as described in Rose & Meyer (2002) is the area of the brain that controls the “why” of learning. This area of the brain is highly linked to motivation. Anderman & Anderman (2010) discuss multiple motivation theories in their book *Classroom Motivation*. Whether this area of the brain controls the feeling of self-directedness and a need for relatedness as described by the Self-Determination Theory, or a longing for stability, interest in loci, and seeking for control as described by Attribution Theory, the affective network is in control of student motivation. In every single theory, the student is always seeking success-in a perfect world-or is giving up-from frustration. In the SETT framework, teachers are looking for tools that will destroy frustration levels and allows students to integrate into a system of communal learning without seems and without hindrances. During teacher observations, student motivating factors are greatly considered by all teachers in the team (again, teachers from different backgrounds and with different theories about motivation). The decision about tools can be greatly impacted by what teachers believe will allow the student to become motivated and engaged with the least amount of restriction or scrutiny in the classroom.

Jack’s motivation is greatly contingent on the availability external factors. He responds well to additional playground time and for special privileges such as being named hall monitor or class monitor. Lessons which will help motivate him could take place outside and could offer him the opportunity to take a leadership role in the classroom. Jack is also very interested in drawing and art in general. Offering texts about art and drawing may engage him to a greater degree than other texts have.

SETT also supports the idea that brain research has supported for a very long time, no two students are alike. For this very reason, a SETT profile should be made for each child in need of services and not for whole groups. Brain research shows a great deal of success in advancing learning ability by using new technology in new ways to help open doors for which keys are not available. Rose & Meyer state, “And although it is possible to remove barriers and expand access to learning by offering content in a variety of media, the fixed nature of speech, text, and images makes this an impractical, unviable option for most educators. The flexibility of new media opens new doors to diverse learners. Digital capacity to combine and transform text, speech, and images leads to a more diversified palette for communication-one that can accommodate the varied strengths and weaknesses of each medium and every brain” (ch.3 p.1).

**Tools**

Once the basic profile is made, the recursive process can continue with ongoing observations and regular meetings. As the brain of the student grows and develops, so too may his needs for AT devices change. As for now, Jack would benefit most from the acquisition of EnableTalk gloves and a feedback pen, also known as a smart pen.

EnableTalk gloves (more broadly known as smartgloves) are a very new technology, although they have existed in different forms and with different purposes since the 1990’s according to Oz & Leu (2011). The smartglove uses network of accelerometers to graph out the movements of the hands and match their motions to a bank of signs found on the internet. The through the use of an app on a smartphone or tablet device, the gloves transmit what they have been told by the user’s hands and the app translates into audio. The EnableTalk gloves would allow Jack to communicate more promptly and with more clarity with his peers and teachers. The ability to speak more clearly will break down a wall that has been built up around Jack for a very long time. When his frustration level comes down, his sense of self-efficacy will increase and he will be more willing to try new activities and challenges. This will also create new avenues for Jack to explore when it comes to expressing his learning. Because although it is known that Jack is best at expressing his thoughts visually, growth eventually takes place when he moves out of that comfort zone and looks for new opportunities. The EnableTalk gloves will cost twenty dollars when they hit the market this year or early next year.

The smartpen, which comes in a number of brand names and stylish models, will be useful to Jack in multiple ways. It will work to aid his communication barrier as would the EnableTalk gloves, but instead of allowing his signs to become verbalized, the smartpen would allow Jack to write in his currently illegible handwriting without the frustration of not being understood. The smartpen will have Jack write out the alphabet and will store his handwriting for each letter so that it can translate handwriting into a word document. In this way, Jack can still participate in quickwrites in the writing workshop without being excluded on the premise that he “gets to use a computer.” Children have a tendency to exclude those who have special needs based on the fact that they are simply different-that’s why making each student as integrated as possible will increase the child’s self-image and therein his motivation to work. Smartpens have also been effective tools for helping teachers diagnose and intervene upon reading difficulties and lapses in reading concentration. DePrenger (2010) explains that smartpens can be used while reading to annotate texts and record when students lose focus on the text so that predictions can be made as what causes the loss of focus. As the student reads he uses the pen to follow along each word and then write notes as he sees fit. When the underlining stops, or is disrupted in any way, the pen records what the student was reading at that point and saves the data in a file. In addition, the pen makes some sort of alarm-a ding, buzz, or vibration- that brings the reader’s attention back to the text. In Jack’s case, the vibration or possibly a flashing light would be most effective.

Both the smartgloves and the smartpen would be highly beneficial to Jack because they help reduce his frustration at communicating and would free him up to express his learning in more efficient ways. In addition, they will work seamlessly with the iPad he already uses and is familiar with.

**The Inclusive Lesson**

The following is a lesson designed specifically for an inclusive setting in which Jack would be able to use his new assistive technology without hindrances. The lesson is derived from a reading workshop in which he would have already participated. The difference is that now Jack will be armed with tools that will help to drive him forward in areas that he would previously give up out of frustration.

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| **Preparation** | * Prepare to read aloud from “The Story of Theseus” from *Classic Myths to Read Aloud* * Read all texts chosen for this unit. Prepare text sets (present Jack with a text including visuals) * Have pieces of chart paper and markers ready for each small group of students. (and a smartpen for Jack\_) * Have students collect unfamiliar words on index cards in their reading for the word study lesson that will follow. * Conduct multiple quickwrites, where students respond in writing for 2-10 minutes to quotations and images, during this unit. Excerpts may come from the text set. |
| **Demonstration/**  **Modeling**  **Create an Anchor Chart**  **The Hero’s Journey**   |  |  |  | | --- | --- | --- | | **Notice** | **Name** | **What I am thinking** | |  |  |  | |  | | | | Possible discussion topics and actions:   * This unit examines the theme of the hero’s journey. We will be exploring how authors use different ways of writing to explore this theme. * Countless stories from around the world follow the same pattern, and we be looking at the common stages of the hero’s journey. * Ask students to turn and talk about common traits of adventure stories. (Jack should have his EnableTalk gloves and his iPad) * Read aloud from a text that follows a hero’s journey and think aloud about important stages in the journey. * Write quotes and summaries from the text in the category “notice.” Name categories to describe these stages under the category “name.” * Offer your thoughts on the stages under the category “what I am thinking.” * Read aloud from “The Story of Theseus” from *Classic Myths to Read Aloud.* Some important stages in the hero’s journey to notice and name might be: * The Ordinary World * The Call to Adventure * Refusal of the Call / Reluctance * Meeting the Mentor * Crossing the Threshold * Tests, Allies, and Enemies * Approach the Innermost Cave * The Ordeal * Reward * The Road Back * Resurrection * Return With Elixir * For example, you might notice that Theseus weeps and is reluctant to leave his mother and name this “Refusal of the Call / Reluctance.” * Under the category “What I Am Thinking” you might respond by saying that refusing the quest at first shows the hero is human and has weakness. * Offer students opportunities to turn and talk about stages they are noticing and their thoughts on their significance. |
| **Engage Students/ Support Practice**   |  |  |  | | --- | --- | --- | | **Notice** | **Name** | **What I am thinking** | |  |  |  | |  | | | | Possible discussion topics and actions:   * Using the fishbowl, model taking a story from the text set with a small group of students and noticing and naming stages of the journey and thinking about their significance. * Students read stories from traditional and modern literature and notice and name stages of the journey, thinking about their significance. You might spend several class periods with students reading stories from the text set and, noticing, naming, and thinking about stages from the journey. * As students read over time, offer them opportunities to select their own stories, including from movies and TV, to include in the text stack for reading with their peers. |
| **Sharing** | * As a class, compile what stages you all have noticed and named into a tentative chart of stages of the hero’s journey. * Compare the student generated list of stages of the hero’s journey with the hero’s journey scaffold and have students turn and talk about differences and ideas. * Notice and name stages of the hero’s journey that may have been missed and read aloud from texts to give examples. |

**Evaluating the Lesson**

In lesson planning, the ultimate test is whether or not the student can express that learning has taken place. So step number one would be to conference with Jack and to check his quickwrites for understanding. But, before step number one is the planning stage itself. One great resource that is highly underutilized by many teachers is the effective eyes of other teachers. In order to evaluate a lesson before unleashing it on students, it should be sent to a few other teachers for criticism. The most effective way to do this within the SETT framework is to have all teachers in the SETT team meet and exchange lessons. Each teacher then has a common goal and has already discussed the implementation of ATs. The peer evaluation process is one that teacher use for their students regularly and is one that should be used for teachers as well.

Once the lesson has the approval of colleagues and has been taught to the class, conferences are a great way to check for effectiveness. Nancy Allison (2010) has a great format for reading conferences which can be found on page 156 or her book *Middle School Readers*. In this case, Jack would be using his new technology for the first time with a teacher. How Jack responds should of course continue to be his choice, if he prefers to draw a picture in response that would be an acceptable form of response. However, to meet the goals of his IEP he would be encouraged to use his iPad and smart items in order to verbalize his responses.

Another great way to evaluate the lesson plan is to use a rubric, which can be found in several places. One great example of a rubric for self-evaluation of inclusion lessons can be found at http://www.montclair.edu/media/montclairedu/cehs/documents/ncate/individualpr ogramassesmentsystems/SPED\_567\_Rubric.pdf. The rubric allows one to plan in accordance with the goals of the lesson plan itself. Then upon self-evaluation, make changes as needed until the lesson suits the needs of the student/s it is designed for. Chapman & King (2005) says that rubrics are designed to assess what is taught and that those who are being assessed should partake in creating them (p.100). Although in the original context Chapman & King were referring to assessing students, the same rules apply to teachers. The SETT team should create a working rubric for evaluating each other’s lessons and use it when meeting as well as to self-assess.

**Reflection**

During this project I was taken away to a few different places. I went from panic at the prospect of creating a profile of a fictional child to panic at the prospect of making a lesson plan based on the SETT framework. Eventually I realized that SETT is not a framework for lesson planning, but merely a framework for discovering tools to use in lessons. Once I realized that the lesson plan was just a lesson plan, I was able to focus more on finding useful technologies that had not been discussed in class before.

Upon moving back to Dallas, I met up with an old friend whose parents are both deaf. She grew up speaking sign language with them and told me about how often they had difficulties communicating in public and with strangers. I became interested in the idea that one of my students could very well be deaf in the future and that it would be a good idea to write about a deaf student. At that point I had already created Jack, a mixture of a few students I had already taught. I knew it would certainly add come complications to the project, but felt so compelled to write about ATs for deaf/hard of hearing students that I decided to add deafness to his profile. I started doing research. After a while, I came upon a few articles about a Ukrainian team that had created gloves that turn sign into audio. I was immediately obsessed. I called my friend and told her all about it and consulted her on some of the basic uses and possible flaws. We were sold.

Although Jack’s profile includes several other diagnoses, I think that focusing on the area of great frustration will help make the most headway. I would like to see where this classroom could go for a deaf student with EnableTalk technology. Imagine the bridges that could be spanned with this technology.

I was and still am very apprehensive about my lesson plan. The guidelines for what it should be were vague, but to me seemed to say that we had freedom in choosing. I chose a lesson which every 6th grader will be taking this year. It is the same lesson they will all get; after all that is what inclusion is. Jack’s technology will allow him to succeed in this lesson and more like it to come. I can’t wait to test these out with my friend who is planning to buy them as soon as they come out.

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