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## **TPCK Technology Intervention Project**

### **Narrative of Student**

The student that we have been working with in implementing assistive technology is Katelyn (name has been changed for privacy purposes). This student has a physical disability and requires the use of a wheelchair. Her hands are always clenched tight in a fist which may be related to her physical disability. Katelyn loves funny noises as she will smile big and laugh if someone sneezes, coughs, or even starts to choke. Also, Katelyn really enjoys when one of the paraeducators sings to her. Katelyn is nonverbal and her family's native language is Spanish. Katelyn is now in her second year of school and therefore is classified as being in 1st grade.

The classroom teacher Mrs. Smith (name has been changed for privacy purposes) provided us with many suggestions about how we could help Katelyn by using assistive technology. Since Katelyn clenches her hands tight and has limited fine motor control, Mrs. Smith suggested that we needed to implement a technology device that would be easy for her to use. She also suggested that we should include loud sounds with any technology we implement, since Katelyn loves sound so much and is motivated to learn through sound.

### **Inquiry**

**A. What are the learning needs of the student? How do these needs relate to the content?**

**What are the desired learning outcomes for the content being taught?**

Katelyn has many learning needs that can be met with technological implementations. Currently Katelyn she has no way of communicate with her parents, teachers, aides, and peers by even using simple phrases such as "yes" or "no." She also has no way to communicate whether

she understands a concept that is being taught. Basically, a big smile means "Yes, I understand" or "Yes, I am interested." One of her IEP goals is to learn how to nod her head yes. While learning yes/no is one of her learning needs, a pre-requisite to this skill is the ability to make a choice. Katelyn does not yet have this ability and thus we will focus on teaching her to choose, furthering her along the path of communication. Another educational need is for her to be able to participate actively within the classroom. She currently watches what is happening around her and has no spontaneous participation in class.

Our basic goal for this intervention is to find a way for her to communicate and participate in the class. As of now her role in the class is solely reactionary, we would like for her to participate actively. Another complicating factor that we have come across is that the teacher retired suddenly right as we were going to start taking baseline data. There is currently no teacher in the class and the paraeducators are trying the best they can to keep the class orderly. When she left, the teacher took many of the objects that Katelyn liked to play with and this might factor into our difficulty in getting Katelyn to respond.

**B. What are the pedagogical strategies being used? Why did you select these strategies?**

Within the classroom, many pedagogical strategies will be used for this student that will enable her to utilize the technology devices effectively. It is critical that these pedagogical strategies tap into her abilities, interests, and likes, while assisting her disabilities. The pedagogical strategies used must be engaging and interesting for the child to participate in and enable her to want to use the technology devices. Since our student has difficulty with language, we believe that the two most helpful pedagogical strategies are hand over hand and modeling. These strategies are already being used with the student and thus she will be familiar with them

and a new teaching strategy won't inhibit her learning of the new material. We want to be respectful of the student and though using the least intrusive method is best practice, we believe that these are the least intrusive method that will work with our student. It is critical that the new technologies are effectively integrated within her learning environment. She must have many different opportunities to communicate and participate within the classroom instruction like the other students. We selected these strategies as a group because they best fit with the student's needs and abilities. This child has potential to be able to learn how to communicate and we believe that the technologies incorporated will enable her to learn the parameters of communication.

**C. What technology is being used in the teaching and/or learning? Why did you select this technology?**

We are going to try using a recordable switch, which is comprised of two large and colorful buttons which she could easily hit with her hands. The recordings on this switch can be changed at any time, to fit specific needs and purposes, however we chose the switch specifically because we think it may help her to make a basic choice. The switch has two buttons which, while allowing a choice to be made, will not overwhelm Katelyn. Also, this switch seems to match her physical capabilities in that she does have some control of her hands and these buttons are not difficult to press even with her hands in fists.

**Principles of Effective Technology**

**Principle of Effective Technology #1:** Effective technology integration involves the students as well as teachers in using the technology.

- The technology device that we integrated into the classroom directly involves both the student and the teacher. This is because the device requires the teacher to record vocalizations on the device before the student uses it. Also, when this device is used by

the student the teacher, or one of us, we are able to record data and observe how Katelyn interacts with the device. Both teacher and student are actively involved in using this technology.

**Principle of Effective Technology #2:** Effective technology integration is essential not peripheral to the learning activity

- The learning activity in this case is learning how to make a choice. The rocker switch gives her the option to make a choice for herself. The rocker switch is the way Katelyn makes her choice at this point there is no other way available for Katelyn to do so, thus the switch is very essential to the learning activity.
- This is a simple device is not a superfluous add-on it serves a clear and important function. The switch is not the motivational tool. The reward of choosing sounds or songs the student likes is the reward. The switch is not the focus in and of itself; the focus is to use the switch to provide a choice.

**Principle of Effective Technology #3:** Effective technology integration focuses on the learning task and not the technology.

- Our learning objective is to have her make a choice. The technology just enhances her opportunity to make those choices by just pressing a simple button on the switch. We did not focus on the technology, but more in making it fun for her to learn how to make that choice of accessing something herself. The technology was a tool that just enhanced the learning task we had set for her.

**Principle of Effective Technology #4:** Effective technology integration facilitates learning activities that would be more difficult or impossible without the technology.

- Since we are trying to teach her to make a choice and she is non verbal, and has limited motor capabilities, this switch allows her to make the choice herself, removing the guess work of people around her. This had not been a possibility until we implemented the use of this switch.

#### **D. How was data collected?**

We originally separated baseline into her use of the switch before and after training.

However as we were able to get to know the student better and speak with the teacher and the aides we were told and further observed that Katelyn did not understand the concept of yes and

no. She communicated excitement through a smile and movement and dislike through no reaction. So from this we decided to change our plan and observe first her ability to make a choice without a switch and contrast that with her ability to make a choice with the switch. In general we have observed that our student does not make choices. We believe that this might be because she hasn't been presented with the option to make choices before. It might also be difficult for her to understand because she comes from a primarily Spanish speaking family.

Here is the form for how we will collect baseline data.

Name of Student:  
Name of Observer:  
Date:  
Setting:  
Classroom Teacher:

# of times student is shown object of preference—Positive Reaction (e.g. smile, noise, reach, laugh)

# of times student is shown object of preference—Negative Reaction (e.g. look away, no smile, silent, no response)

#### **E. How was the data analyzed?**

The baseline data we are going to analyze by seeing if we can understand whether a choice has been made or not. If we cannot tell if a choice has been made will just make a data point of zero. When we implement the technology, we will see if she can hit the switch by herself. If she does, that will count as one tally mark each time that she hits it on her own.

#### **F. How was the data interpreted?**

If Katelyn activates the switch to hear the sound, we will interpret that as her making a choice to access the sound. If she doesn't hit it, we will assume that she doesn't want to hear that noise.

**G. How has success been determined? What is the criterion for success?**

Success will be defined as an increased independence and communicative ability. For us, *independence* is the ability for her to use the switch without assistance or physical prompts. Success in an increased *communicative ability* is that the switch will increase her participation in classroom activities such as singing the "Good Morning" song with the class and getting attention of the paras or the teacher. Ultimately, the main goal of any technology device implemented for a child with disabilities should be to help them gain more independence. Since she is currently nonverbal and has extremely limited communicative abilities we are planning on starting small with the hope that in time we can make changes that will allow this student to gain more access to the activities that her peers engage in.

**H. Record what you did each session with your student.**

Journal Entries

11.6.08- Mary Susan

When I visited our student today, the aides had taken her out of her wheelchair and had her laying on her mat on the floor. They had set a few toys in front of her, but she has no ability to play with them. She was pretty much just looking at herself in the mirror. I went to collect baseline data. I pretty much showed her some objects/toys/sounds that I thought she would enjoy. However, sometimes I would get a smile and sometimes she wouldn't even do that. When I would show her objects, such as keys or a pen, she would do the same thing. I was not able to tell if she wanted the object or not. She could have just been smiling at me!

11/7/08 - Diana

So when I walked in on Friday I was told that the teacher had left/retired the day before! So currently there is no head teacher in the classroom which presents its own challenges and as soon as they get a new teacher, we will have to explain what we are working on again, but we should be able to deal with that.

So, I tried to start collecting baseline data, using the above sheet, but I ran into a couple of

problems because it seems that we need to operationalize a couple things. As I was collecting data, there were a couple things that I realized,

1. That instead of just a tally, we may need a description of what we perceived to be a choice and how she made it manifest for each tally  
and

2. I don't think that she knows how to choose because she'd never really been given the opportunity. While she does smile when I engaged her in an activity with an object, it was essentially after I would shake the pompom in front of her face (so I had already made the assumption that that was what she'd be interested in and helped her play with it), so she wasn't actually making a choice between the pompom and the pen. If I asked which she liked better, I wouldn't get any reaction until we were already playing with one.

We have to either change what our goal is, or find some way to take her enjoyment for the activity and teach her to choose ahead of time that that's the activity she'd like to participate in. Essentially, here is my data: I showed her approximately thirty objects in pairs and individually to look for signs of preference. There were no observations of any preference of an object prior to

11.11.08- Mary Susan

Today I went to visit Katelyn again to collect baseline data. During the time that I was there, the aides had to take the students into the OT room to change them. While I was in there, I played with a hula hoop and she just loved that to pieces. She just laughed and laughed for a long time. I continued to show her objects of preference and objects of non-preference, but I wasn't able to see if she preferred one over the other.

11/20/08 - Lila Jenson

I went to the classroom today and brought the switch.

I went into the classroom on Thursday and started using the switch. I programmed the switch with two different songs. I used hand over hand to help her press the switches and then I pointed to the switch and used verbal instructions. She activated the switch 3 times. I then programmed the switch to say either "My name is (Katelyn)" or "I like to listen to songs" and after modeling and hand over hand she chose 4 times. I then programmed the switch with fake coughing and fake sneezing and she really didn't respond at all to it when I played the recording. I think she responds almost as much if not more to the visual stimulus as the auditory stimulus.

I was talking with the para's and I think it would be important to use visual cues with the switch. The para's seemed to think that there would be no problem taking pictures but the official teacher is coming on Monday and they said to talk to her about it. I left the switch there and labeled it with tape. There is also an extra battery there. Sometimes after about 10-15 min the switch stops working, but if you change the battery it should be fine.

11/21/08

I went into the classroom today and used the switch with Katelyn. I programmed the switch to use two different sounds which the laughing of a student in the class and the sound of a audible toy. I used hand over hand movements and modeling to help her press the button on the switch. Katelyn really enjoyed hearing the laughing sounds. After about 2-3 minutes of modeling and hand over hand movements Katelyn used her hand to activate the switch by herself.

11.24.08- Mary Susan

I went to the school today and used the switch with Katelyn. She was in her wheelchair and I just put her at a table and modeled how it worked and then did hand over hand prompts to help her activate the switch. I did hand over hand prompts 15 times and then she activated the switch 10 times on her own with a verbal prompt. She enjoyed hearing the sneezes and coughing.

11.25.08-Mary Susan

When I got to the class today, they had Katelyn in her stander. She had been in there a while, so I think she was really tired. I think this affected her ability to hit the switch, and also her willingness to do it. I did hand over hand prompts 10 times and then gave her verbal prompts to hit the switch on her own. I told her if she wanted to hear the funny noise again she had to hit the switch. She hit it 4 times during a 15 minutes period, but then she was just too tired of being in the stander that I had to quit.

12.4.08- Mary Susan

Today I went to the school, and the class was in the auditorium practicing for their play coming up. I asked the teacher if I could do the intervention with Katelyn for a little bit, and she said sure. I took her back to the classroom where it was nice and quiet and put her at the table. Today I just thought I would model how to use the switch one time and then see if she could do it on her own with verbal prompts. It worked! I put it where she would be able to reach it and she activated the switch 25 times without any help. She seemed to really enjoy the noise and was continually smiling and laughing. She most likely would have continued to activate the switch if she didn't have to go to PE.

### **Evaluation of Intervention**

#### **A. Do you consider your project successful? How do you know that it was successful?**

We originally defined success as an increased independence and communicative ability. Before the intervention, Katelyn was only able to engage in preferred activities when another person chose to come and engage her in them. For example, Katelyn will giggle and smile when someone comes and sings to her, when someone sneezes, or when she they hold up a mirror to her face, however, she had no way of letting anyone know that she would like to hear a song, a sneeze, or look in a mirror. When we showed her objects of preference as well as objects that we knew she did not like and asked if she'd like the object, no choice or sign of preference was shown. Essentially, she had no way to initiate any activity of preference herself, but would wait until someone chose to sing to her, etc. We feel we have begun to succeed in increasing



Katelyn's independence, because she can now independently activate the switch with a recorded sneeze and cough on her own. Our next goal was to increase her communicative ability and activity level in the classroom activities. With the switch she could potentially sing the "Good Morning" song with the class, she could get the attention of the paraeducators and the teacher, and eventually she might be able to say yes and no. While these are things that we were hoping for, we have not accomplished these things yet through our intervention, however, we know the progress that we have made is important steps in the process. In order for her to be able to participate in more of the classroom activities, we need the teacher take the progress that we have made and begin planning for Katelyn to use it during as many of the classroom activities as possible. While this has not happened yet we are hopeful that these activities will be possible in the future because of this intervention.

**B. What should have occurred in your project that did not according to the inquiry plan?**

Our main goal completely changed from what we originally planned to do. The first goal was to have Katelyn learn how to use the switch to say 'yes' or 'no'. However, after talking to the teacher, we learned that we needed to start very basic because she doesn't even understand the concept of yes and no. So we changed the goal to her being able to make a choice. She didn't necessarily make a choice between the two switch buttons, but instead made the choice to hit the switch and access the noise she wanted to hear. Instead of having the switch say yes and no, we had it make funny noises she likes to hear such as sneezing and coughing.

**C. How did basic assumptions, values, and the beliefs of others affected the situation?**

As a group the values that were important for us included that the project be one that benefited the student. As a group we visited our student several times before finalizing our plan. Also, we assumed that there would be no bumps along the way; however we were able to roll

with them because of our value of focusing on how we can help the student rather than presenting the perfect project.

**D. Describe how your group worked together. What would you do differently with your group?**

Sometimes it was difficult for us to work together as a group because all of our schedules are all very different. Also, scheduling times to meet and collaborate on our ideas was really difficult to do. When we did come together it was really great to have everyone contributing and sharing their ideas. Everyone was able to go to the school and meet the student we are working with. We thought that it would be nice if we could all go together the first time to meet Katelyn. However, that was completely impossible since we had four very different schedules. We came up with a lot of ideas that we had about our project while during class. However, we could have correlated this a bit better. Having the wiki was extremely helpful in passing on new information that had been collected from going to the school to work with Katelyn. However, a lot of the information we had to discuss in depth which was best accomplished in person which was really difficult to do. If we could implement this project again, one thing we would change about the group is maybe getting a head start on starting the intervention sooner. However, we were able to gather a lot of valuable data from the date we did start the intervention. Over all it was a great experience to actually implement a technology within the classroom setting.

**E. Consider the appropriateness or suitability of the instructional decisions about the strategies and technologies you chose.**

As a group we chose a technology device that would be beneficial and appropriate for Katelyn's educational needs. In the beginning stages of intervention we brainstormed on many possible technologies that would be beneficial for Katelyn. However, as a group we decided on

the rocker switch. As Katelyn has very limited motor function as well as intellectual/cognitive impairment, as a group we knew that we needed to implement strategies that Katelyn would understand how to use and be able to physically access. We believed that by implementing a rocker switch Katelyn would be able to physically use the device as well as understand what the device is used for. Implementing the rocker switch device within the classroom proved to be very appropriate and suitable for Katelyn's needs. The main strategies we used with Katelyn included trial and error of how to implement the rocker switch. We had many ideas on how we could implement the technology; however we did not know what would work best for Katelyn's educational needs. We eventually decided on using the device so that Katelyn could access familiar sounds and noises that occur within her environment. We knew that Katelyn loved noise because she enjoyed hearing people sing and her face always lit up when sounds occurred within the environment. Therefore, we wanted to give Katelyn the opportunity to be able to access sounds for herself. We recorded sounds using the rocker switch which Katelyn could activate with her hand.

## **Reflection**

### **A. How has this project affected you and your work?**

Although this project has been difficult at times, it has made things clear to us how much *can* be done for these students and how technology can play a wonderful role in their progression. Thinking outside the box and finding ways to make the classroom more accessible for students through technology will undoubtedly be an important part of our teaching special education. After we began working with our student we began to wonder if the goals we had set for her were too high. While we did have to make some adjustments, it has been surprising how much she has been able to do. Our belief in the abilities of these students has grown

significantly, and our confidence in our abilities to implement some of the things that we are learning has been boosted by this project.

**B. How did this intervention affect your student?**

We think that the intervention was very effective with Katelyn. She really enjoyed having us come into the classroom and making noises for her. It's not necessarily a life changing experience for her, but we think that she enjoyed learning how to use the switch and being able to access the noises she loved by herself. She no longer has to wait for someone to sneeze, but instead she can push the button herself and access the noise she loves.

**C. What will you do differently in the future?**

Planning is a key component of any intervention and it would be a more integral part of the project if we were to integrate technology in the future. If it were possible, getting to know the student much better before beginning the project would be a huge benefit. Having the full support of the classroom teacher is also important and in other circumstances it would have been helpful to meet alone with the teacher and talk and collaborate about Katelyn.

**D. What did you learn from this project?**

We learned that before being able to really help a student you have to get to know them. While getting to know a student is essential it certainly takes time that doesn't have to be spent in General Ed. However learning how the student communicates is essential and the after all the whole purpose of Special education is to help the students and that is accomplished through getting to know their individual needs. Most of the knowledge that I gained was practical. I really appreciated the opportunity to work in the schools and gain some practical experience.

**E. How did the technology contribute to or detract from the learning experience?**

We think that the implementation of this technology greatly contributed to Katelyn's learning experience within the classroom. Katelyn usually doesn't have any one-on-one educational instruction because the teacher and the paraeducators do not know what her IQ level is and what she truly understands. When we implemented this technology with Katelyn it was greatly beneficial because it was a whole new learning experience for her.

**F. What would you do different in the future? Give recommendations for other students who may read your project.**

If we were to implement a technology intervention plan in the future there are a few things that we would do differently to make the intervention more beneficial for the student. It was difficult for us to completely implement the technology because we could not be in the classroom all the time since we were not Katelyn's classroom teachers. If we were to implement a similar intervention plan again we would try to schedule a time when we could go into the class at least once daily. This would allow us to completely implement the technology into Katelyn's classroom environment. Another thing that we would do differently is to try to involve the teacher more in the intervention process. We would ask Katelyn's teacher to implement the technology device as much as possible when doing academic activities within the classroom. This would allow Katelyn to become more familiar with the device as well as have opportunities to use the device in many different educational applications.

**Recommendations:**

- Get to know the student well before implementing the technology device.
- Ask the teacher plenty of questions about the student's abilities, interests, educational needs, etc.
- Collaborate with the classroom teacher whenever possible.

- Ask for suggestions on what would be beneficial for the student.
- Develop a clear step-by-step plan of how the technology device will be implemented.
- Create a well-developed data collection system.