AAC Adapted Keyboards Assignment

Your Name: Kate Badgley
Partner's Name(s): Kelsey Sachleben

Student Description

Becci, who has cerebral palsy and normal intelligence, is eight years old. She is ambulatory, but awkward. Becci has been using a scribe for her written work, as she cannot write with pencil and paper. Since her speech is difficult to understand this becomes a problem when her scribe is not familiar with her speech. So, she is dependent on someone who is familiar with her speech to write for her. Also, she has extremely poor spelling due, in part, to never having had to write for herself. Becci can reliably press ¾" keys on an IntelliKeys keyboard with her left hand.

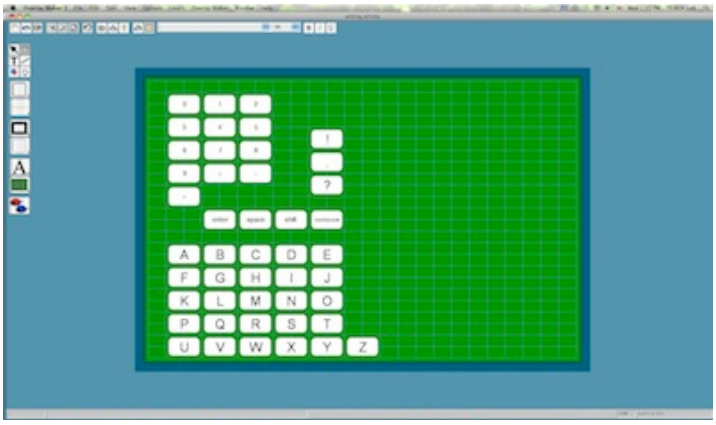
This project will help show her how to write out correct sentences, spelling, and produce quality products of writing using the WriteOutLoud program along side the IntelliKeys keyboard. She is also now able to communicate with her peers and teacher and to participate in class. We built a standardized testing keyboard so she is able to take standardized tests in the classroom. She is able to identify pictures with what she is trying to say and then an alphabetical keyboard as well without unnecessary keys. There is also a number pad and math functions to assist Becci in math. With multiple keyboards, she able to communicate and they support her while taking different tests. The design of the IntelliKeys keyboards is to make alternative keyboards for students' with disabilities. For our student, we designed four different keyboards to assist her in communicating, writing, inclusiveness, spelling, and test taking. The design was also made for her, individually, because she is only able to use her left hand to push keys and the keys must be big enough for her to push.

Collaboration

We wrote down what each keyboard needed and talked how to make the keys be big enough for Becci to push. During the making of the game keyboard, we decided to put the action that happened in the game on the keys rather than what would be pushed on a standardized keyboard. While Kelsey was constructing the keys for the keyboard on the computer, Kate tested to see if the actions were correct for the corresponding keys on the IntelliKeys keyboard. We designed each keyboard for her grade level and placed pictures that could be understood by Becci as well as putting the standardized keyboard into alphabetical order because Becci would most likely not know the QWERTY keyboard.

Talking/Communications/Writing/Social Activity:

This board is designed for Becci to use in place of a standard keyboard. Everything is justified to the left so that it is easier for her to type. We included numbers for her



to use with math. We also used the alphabetical keyboard based on her grade level. We gave her punctuation keys so she is able to work on grammar and other necessary keys, such as shift, space, backspace, and enter. This way Becci is able to correct her mistakes and make full sentences. When using this keyboard, Write Out Loud will be used to help Becci hear and see her sentences.

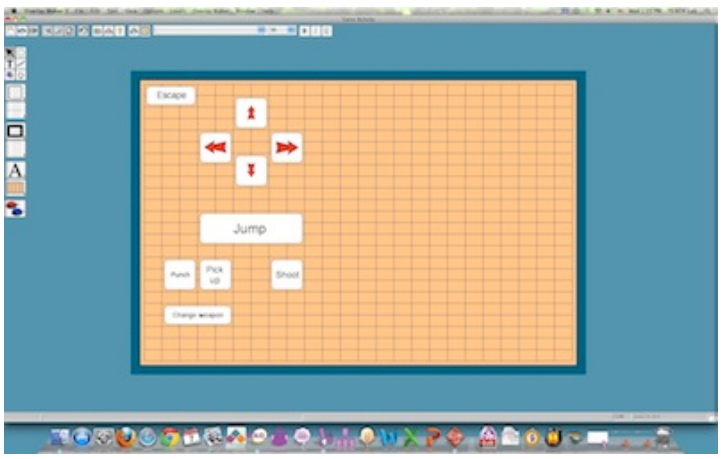
This keyboard also allows her to fully communicate with her peers and teacher when the pictures are not enough through her talking overlay she can turn to writing overlay. With this overlay, Becci is able to improve upon her ability in spelling now that she can type out the words without any prediction or autocorrect on. Individuals with spasticity could benefit from a keyboard arranged to better utilize their strengths (Obringer, Coffey, McFadden, Etheridge, & Pounder, 2007). This means Becci would not have any availability to autocorrect her work and it will be completely hers.

> Outside of the mechanics of writing, the actual ability to spell can also be problematic for students with physical disabilities. Phonological awareness is said to predict spelling ability, and Sandberg (1998) indicated that this is true for non-speaking students with cerebral palsy as well. (Tumlin & Heller, 2004)

This board also helps her social need whenever the picture, or talking, board is not enough to communicate with her peers. This is assisting Becci's unintelligent able speech. Now she can speak for herself through a keyboard and not use pictures to try to describe what she wants and not the keys that are already set. Becci's learning needs are being met by allowing her to say what she wants and can help her to participate in some of the activities in the classroom to help her and to have her engaged rather than just sitting there. This board helps exceptional students to monitor their errors in oral language and written language by allowing them to see what they have said because oral and written coincide with one another and sometimes you write how you speak, then that could turn into an activity and describe how we sometimes speak grammatically incorrect and that's how it comes out on paper. Our board can help teach strategies for producing legible documents by being able to see what she writes and discuss on how Becci and the teacher can work through it and improve typing skills as well as full sentences and spelling.

Game Activity

The game we designed the keyboard for is *Otto Matic*. When Becci plays this game, she is able to do the correct functions as the words on the keys say. If the keys say what action they are, then it is easier for Becci to play the game and has to press fewer keys. All keys are organized on the left hand side so she is able to press and reach all necessary keys.



Game play is crucial for social development because it allows the student to be in control of their actions and emotions by getting them engaged into another type of world. In the article, *Video Games in Education* (Kurt Squire 2003) provides an outlook such as, “primarily, however, video games elicit powerful emotional reactions in their players, such as fear, power, aggression, wonder, or joy.” Squire proposes how games include different ways of promoting emotions by allowing children to pick their character, barriers to solve, working with peers, and by having a reward system (Squire 2003). This can provide an explanation on how a child can gain self-esteem when playing different types of games and learning how to follow different directions underneath the game requirements. Students can attain how to work with others and to stay engaged in the game. *Video Games in Education* (Squire 2003) also provides an outlook on how games should obtain objectives for students to follow and how this can help them understand how well they are doing in the game. Also, the article proposes how games provide different levels students can choose from, which helps students work on progressing in the game. This can help in student’s education when they are moving into different grade levels and learning harder material in the classroom. Another article, *What Video Games Have to Teach Us About Learning and Literacy,* by James Paul Gee (2003), proposes the same idea such as, “…. good games allow players to customize the game to their own levels of ability and styles of learning.” This can help students learn how to build up to a certain goal by starting small and aiming to a higher goal. Gee (2003) also proposes how games have different barriers and requirements to follow to reach a certain goal. This can show if students are doing the game in the wrong way, such as giving them so many lives until the game is over. Students can use this skill in a classroom when working on different materials and learning how to accomplish a skill before moving on into a next one.

For the game activity, we provided keys that matched the function of the game and how Becci would understand what actions are being taken place. Since Becci is in first grade, we targeted her grade level by putting the action words into the keys that they belonged to. The words are spelled out in English since that is Becci’s first language. We also spread the keys out for her to be able to play the game easier. Within the keyboard are arrow keys to allow Becci to move the object in the game; the arrow keys are visuals to allow her to understand which direction she should go in the game. There is a space bar for the object to jump, therefore we put the word “jump” on the key to allow Becci to understand what the object is doing. We had to provide an option key to allow the object to punch and we provided the word as well to allow Becci to understand when she has to use that key. We did a command key to allow the object to shoot if they needed to and provided the word on the key for Becci to comprehend the action for that key. There is a control option key that allows the object to pick up different types of objects through out the game and provided the words as well. We added an escape key as well for Becci to be able to quit the game when she wanted to. There are sound effects when she is using the overlay while playing the game as well. Games allow students to engage individually and as a group, which both focus on different skills. Both of these

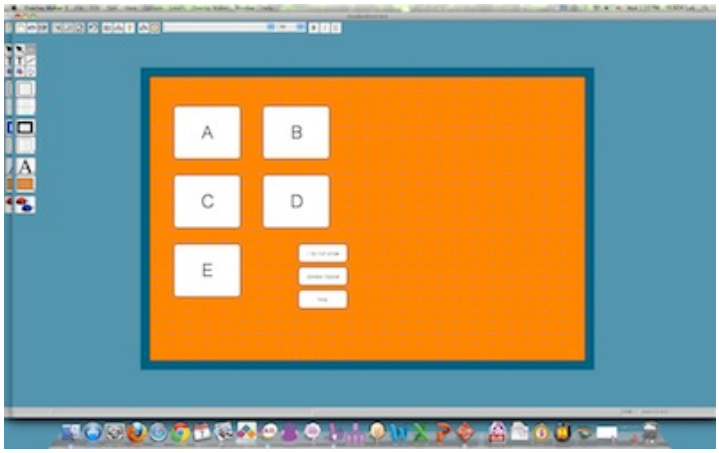
skills should be in a learning environment because students can build social skills and can gain information from their peers. Group activities allow peers to express their emotions with one another and how they can problem solve with one another to figure out a solution. When focusing on individual activities, the student can focus on their own strengths and weaknesses and promote self-reflection. Individual tasks allow students to monitor their own progress and to set goals for themselves. This project could help students are non-verbal because they can visually see the actions on the overlay maker and physically see as they are playing the game. Students who are non-verbal can interact with other people when playing games by working together. They can work together into how they are going to earn different points and try to win the game.

James Paul Gee. (2003). *What Video Games Have to Teach Us About Learning and Literacy.* Retrieved from http://delivery.acm.org/10.1145/960000/950595/p20-gee.pdf?ip=147.226.99.196&id=950595&acc=ACTIVE%20SERVICE&key=EA62C54EFA59E1BA%2E9ECB7EC4E927299D%2E4D4702B0C3E38B35%2E4D4702B0C3E38B35&CFID=719795474&CFTOKEN=12932889&__acm__=1444269079_b3d911829a7473b89a3058b3a0e16955

Squire, K. (2003). Video games in education. *Int. J. Intell. Games & Simulation*, *2*(1), 49-62.

Standardized Testing Activity

Since Becci's scribe had difficulty understanding her, the scribe is now able to understand which letter Becci wants as the answer. With this board, Becci is able to take multiple-choice questioned tests and ask for help when needed. This board is equipped for ISTEP, scantron tests, and tests in class. This can benefit if she needed a question repeated or if she needs help on a question. This can benefit her school's performance because it prevents Becci to be misunderstood and have the wrong answer written down.



This overlay meets Becci's needs by being standardized with multiple choice. Everything is categorized on the left hand side of the overlay so she is able to reach the keys. Having visible and push able keys, she is able to take her tests in class and there would be no confusion between Becci and her scribe. Becci is pushing keys because her speech in unintelligent able unless her scribe has worked with her many times before. We also added a "Please repeat" key, "I don't know" key, and "help" key. This way if Becci does not understand something on her test she is able ask for help or if she is not sure on an answer for a question, then she can say "I don't know" and her scribe understands that phrase to mean that Becci wants to skip it

and move on and come back to it. In the classroom, Becci will still be able to take the classroom tests in the room, especially if the teacher made an alternate assessment for Becci to use on the overlay. Which the law states, “when appropriate, students with disabilities will receive valid accommodations to facilitate their participation in those assessments” (Bennett & Davis, 2001). This allows for Becci to take classroom tests, but in a different form than students’ without disabilities tests. With the Intellitools keyboard with overlay, it is an appropriate adaptation for Becci. She is now able to be understood by her scribe; it is an easier way for her to communicate if she needs help or is confused; she can also work without talking or needing to speak therefore she can stay inside the classroom, with her peers, when she is taking tests; and able to feel in control since she cannot write, she is able to press the keys on her own.

Our philosophy of an alternate assessment is that Becci is doing the same thinking as everyone else in the classroom, but performing her work in a different way.

> The IDEA ’97 amendments relating to student participation in assessments and accountability systems state:
>
> 1) to the extent possible, all students with disabilities will be included in general State and district-wide assessment,
> 2) when appropriate, students with disabilities will receive valid accommodations to facilitate their participation in those assessments (Bennett & Davis, 2001)

Bennett and Davis (2001) states that, “Law further states that results from alternate assessments must be reported with the same frequency and in the same detail as results are reported in the state and districtwide assessment of nondisabled students.” This is supporting our philosophy by making sure that students with disabilities are doing the same amount of work and exercising the same amount of knowledge because they are getting graded just like the students with no disabilities would.

“Developing standardized assessments for this diverse group of students requires a balance between the standardization required for large-scale assessments and the flexibility needed for the classroom teacher to successfully work with this population” (Goldstein and Behuniak, 2012). Even though it takes time and effort to make specialized assessments, it is worth it and law.

Standards Rationales:

CEC standards Rationale

The first CEC standard that this project follows is CEC standard 1, which states: “Beginning special education professionals understand how exceptionalities may interact with development and learning and use this

knowledge to provide meaningful and challenging learning experiences for individuals with exceptionalities."(CEC-1, 2012). This standard can correlate to how we had to modify keyboards for Becci to use when communicating, participating in game/social play, academic skills, and when doing standardized testing. We had to take into consideration how Becci has cerebral palsy, speech impairment, and can only touch 3/4of the IntelliKeys keyboard. Becci was using a scribe, but it was hard for other people to understand her due to her speech impairment. Also, we noticed how Becci has never wrote before, which effects her language development. By using this information, we planned out the different types of keyboards in ways it will allow Becci to be successful in the classroom. She will also be using Write Out Loud along with the Overlay Maker to produce sentences and to speak out loud for her. We provided her a communication keyboard for her to be able to communicate with her teacher or peers by requesting if she needed a drink, a snack, to go to the restroom, if she needed help, and she could respond to yes or no questions. This can promote independent living skills and having the student do things on her own. We designed a talking keyboard for her to be able to use when working on language skills and math skills. We included all of the letters in alphabetical order, numbers, addition/subtraction, equal sign, punctuation, capitalization, and a space bar. She can use this keyboard as well to communicate with her peers and teacher. This will allow students and the teacher understand what Becci is trying to say, which will promote her to learn how to have better social skills. Another good way of how these keyboards are promoting a challenging learning experience for Becci is how she is able to work these tools on her own without anybody assisting her; this will help her with spelling and learning how to do things by herself. We developed a standardized testing keyboard for her to be able to use when participating in standardized tests. We provided her with keys of A, B, C, and D to answer the questions and she can have the questions to be repeated, ask her help, or say she does not know the answer. The standardized testing keyboard focuses on Becci being able to take the tests by herself and to have accurate answers. We created a game/social interactive keyboard for Becci to be able to work individually or in a group while participating in different types of games. We designed the keyboard for her grade level by spelling out the functions of the keys and what they were doing according to the instructions of the game. This will promote interactive development that is displayed in this INTASC because Becci could work with other people when playing the games and staying engaged in the classroom activities.

The second CEC standard that this project corresponds with is CEC standard 3, which states, "Beginning special education professionals use knowledge of general and specialized curricula to individualize learning for individuals with exceptionalities." (CEC-3, 2012). When developing the different keyboards for Becci, we used keys that she will be able to use when participating in the general education classroom. We designed a communication one to help Becci learn how to do things individually. We designed the talking keyboard for her according to her grade level by putting the letters in alphabetical order, putting the numbers in numerical order, adding punctuation, and

addition/subtraction/equals signs. Becci will be able to participate in standardized testing by being able to use her keyboard to create accuracy within her answers. Becci will also be able to communicate with her peers and be involved in social activities by using her game activity keyboard; this promotes social skills by and creating a positive environment for Becci to work in. The different key boards show how Becci can improve on different types of skills and work on specific goals she needs to attain. We used the different applications to apply ways of how Becci can be in an effective learning environment and to be able to participate in a general education classroom.

The third CEC standard that correlates to this project is the CEC standard 5, which states, “Beginning special education professionals select, adapt, and use a repertoire of evidence-based instructional strategies to advance learning of individuals with exceptionalities.” (CEC-5, 2012). This can relate to how we are using multiple technology tools to create alternative keyboards for Becci to use in a general education classroom. We used the Overlay Maker application, Write Out Loud application, and the Overlay Maker to see how well the keyboards worked. We had to plan out the different keys we were going to provide by looking at her grade level, first language, and what was effecting in how she is learning in the classroom. We had to consider how she could only touch ¾” of the IntelliKeys Keyboard, therefore we provided bigger keys on the alternative keyboards for her to push. We had to consider how she has cerebral palsy and how she never wrote things down herself. Becci has a speech impairment as well and it is hard for her peers and educator to understand her. We provided her with a communication keyboard, a talking keyboard, game/social interactive keyboard, and a standardized testing keyboard. Therefore, we are creating multiple ways Becci can present different skills in the classroom. She would be able to communicate with her teacher and peers, focus on language development, work on different mathematical problems, take part in standardized testing, and be engaged in social activities. Becci will be using the Write Out Loud application along with the Overlay Maker because it will speak for her. Write Out Loud will also allow Becci to correct her mistakes and to focus on how to communicate in a better way. Each keyboard is adaptive to Becci’s abilities and will help her stay on track in her learning development.

ISTE-S Rationale

Standard 3 Research and information fluency correlates with this project by addressing Becci’s need for four different boards. With these boards she is now able to use the information and knowledge that she has already attained by being in the classroom and communicate with others. According to Tumlin and Heller (2004), in their article *Using Word Prediction Software to Increase Typing Fluency with Students with Physical Disabilities*,

> Outside of the mechanics of writing, the actual ability to spell can also be problematic for students with physical disabilities. Phonological awareness is said to predict spelling ability, and Sandberg (1998) indicated

> that this is true for non-speaking students with cerebral palsy as well.

This is why we had created a writing keyboard with an alphabetized keyboard. Individuals with spasticity could benefit from a keyboard arranged to better utilize their strengths (Obringer, Coffey, McFadden, Etheridge, & Pounder, 2007). This was a way for Becci to improve on her spelling abilities since she is not able to write with pencil and paper. Her keyboard, or writing, board is also meant to be another for her to communicate with others in her classroom and give her a chance to speak what is on her mind while spelling words correctly and forming full and complete sentences.

Standard 4 Critical thinking, problem solving, and decision making is met by the project by giving Becci the power to use her skills through technology and different keyboards. By being able to communicate with her peers through her writing board, she can solve problems and make decisions. Her talking keyboard may not have been enough to fully communicate with her peers if working on a project together. So to support Becci's critical thinking, problem solving, and decision making, we had arranged the standard keyboard into alphabetical order. When creating her standardized testing keyboard, we took into consideration of standardized tests using multiple choice. This is an example of all three components by letting Becci choose the correct answer for herself.

Standard 6 Technology operations and concepts is achieved through this project by having Becci being able to continuously use and get used to using her different boards. Through the use of her IntelliKeys keyboard, she can grasp a sound understanding of the technologies concepts, systems, and operations. This also applies to her knowledge of knowing how to operate Write Out Loud and demonstrating her knowledge that system so she has a voice using the IntelliKeys keyboard and Write Out Loud together.

Our philosophy of an alternate assessment is that Becci is doing the same thinking as everyone else in the classroom, but performing her work in a different way.

> The IDEA '97 amendments relating to student participation in assessments and accountability systems state:
>
> 3) to the extent possible, all students with disabilities will be included in general State and district-wide assessment,
> 4) when appropriate, students with disabilities will receive valid accommodations to facilitate their participation in those assessments (Bennett & Davis, 2001)

Bennett and Davis (2001) states that, "Law further states that results from alternate assessments must be reported with the same frequency and in the same detail as results are reported in the state and districtwide assessment of nondisabled students." This is supporting our philosophy by making sure that students with disabilities are doing the same amount of work and exercising the

same amount of knowledge because they are getting graded just like the students with no disabilities would.

"Developing standardized assessments for this diverse group of students requires a balance between the standardization required for large-scale assessments and the flexibility needed for the classroom teacher to successfully work with this population" (Goldstein and Behuniak, 2012). Even though it takes time and effort to make specialized assessments, it is worth it and law.

Bennett, D., & Davis, M. (2001). The Development of a Computer-Based Alternate Assessment System. *Assessment for Effective Intervention, 26*(3), 15-34.

Goldstein, J., & Behuniak, P. (2012). Assessing Students With Significant Cognitive Disabilities on Academic Content. *The Journal of Special Education, 46*(2), 117-127.

Obringer, S., Coffey, K., McFadden, G., Etheridge, J., & Pounder, R. (2007). Keyboarding Accuracy for a Students With Physical Disabilities: A Synergistic Approach. *Physical Disabilities: Education and Related Services, 25*(2), 59-66.

Tumlin, J., & Heller, K. (2004). Using Word Prediction Software to Increase Typing Fluency wih Students with Physical Disabilities. *Journal of Special Education Technology, 19*(3), 5-14.

ISTE-T Rationale

The ISTE-T 1 standard refers to how teachers should create a learning environment using prior able knowledge, multiple medias, and by learning through the year of what may be the best practices to use. Teachers will have students learn about real-life situations through different learning activities by providing different types of technology in the classroom. Through this standard, the teacher will be providing ways of how students can be creative in their way of learning, which can reflect on how they perceive information. This correlates to our project because we are providing support for Becci to express her emotions, ways to promote creativity in the learning environment, and what will allow her to succeed the best (ISTE, standard 1.a). We are providing different ways for Becci to show how she understands the material that is being learned in the classroom (ISTE, standard 1.c). She is able to promote independent living skills by saying she is able to go to the restroom or if she needs a drink, which can relate to being involved in real-life situations (ISTE, standard 1.b). The article, *Teachers as Role Models for Students' Learning Styles* by Paichi Pat Shein and Wen-Bin Chiou (2011), states "Teachers identified by students as models in an educational context may play a particularly important role in students' learning processes." This can support our standard by implying how teachers are providing activities and different tools for students to use that can effect how the student learns. The students are following the instructions given by the educators and the educators can be an effective part on if the students are comprehending the material. The article proposes different types of teachers and how they may teach different ways such as hands-on or through lectures; this can be seen underneath our standard because teachers are able to develop different learning

activities involving multiple tools and by choosing what the students will learn best from (W., Chiou, P., P., Shein, 2011).

The ISTE-T 2 standard refers to how teachers promote different learning experiences by having multiple representations of the material by using different types of technology. This correlates to our project because under sub-point c, it relates to how activities should be modified individually by providing different types of learning styles; this can relate to how we customized each keyboard to fit Becci's needs and how she will learn best in the classroom. We focused on her grade level and what her strengths/weaknesses are to determine what needed to go on the keyboards. Through this standard, we are allowing Becci to monitor how well she is doing by providing her different types of media to use that focuses on grammar and spelling. She is able to work individually while using the different keyboards, therefore she will not need assistance from her teacher.

The ISTE-T 5 standard refers to how teachers should stay up-to-date on the different technology because it promotes different ways for students to learn. This correlates to our project by providing different types of technology for Becci to use. She is able to use Write Out Loud, while using the overlay maker to produce speech and to create full sentences. Becci is provided multiple ways of how she can learn through the classroom by having a writing keyboard, a game keyboard, a communication keyboard, and a standardized testing keyboard (ISTE-T, standard 5.c). Through the different types of technology and keyboards, we are improving her student learning and allowing her to participate in the way she will be successful in the classroom (ISTE, standard 5.a) The article, *What Teachers Need to Know About Technology?,* by Yong Zhao (2003), states "…. it is necessary to have a good understanding of what teachers need to know about technology." Zhao proposes how this statement will test how well teachers are doing in the classroom. Educators need to have the knowledge of what each type of technology does and how useful it will be in the classroom (Zhao, 2003). This can relate to our project and support our reason of our standard because if teachers know different ways of how to relay learning activities through technology, then this could relay back to how to improve student learning. This can create effective teaching styles because educators are able to express use of technology by implementing it in their classroom (ISTE, standard 5.b).

SHEIN, P. P., & CHIOU, W. (2011). TEACHERS AS ROLE MODELS FOR STUDENTS' LEARNING STYLES. *Social Behavior & Personality: An International Journal*, *39*(8), 1097-1104. doi:org/10.2224/sbp.2011.39.8.1097

Zhao, Y. (2003). WHAT TEACHERS NEED TO KNOW ABOUT TECHNOLOGY?. *What Should Teachers Know about Technology?: Perspectives and Practices*, *2*, 1.

Technology should maintain in the classroom because it can regulate motivation, self-control, engagement, and allowing students to collaborate with their peers and educators. According to the article, *Student use of the Tablet PC:*

Impact on student learning behaviors, by Catherine T. Amelink, Glenda Scales, and Joseph G. Tront (2012), “Technology-based tools can provide simulation and problem-based learning opportunities as well as access to video and audio clips that can be used to examine a variety of viewpoints” (Amelink, C., Scales, G., Tront G. J., 2012). This proposes how students have control of how they want to represent their ideas in a project, whether it is through a power-point, diagram, or a video clip. The article also presents how students can gain information from their peers and to receive feedback as well from their educators. Students are more engaged into the activities by working with one another on different projects and by seeing information displayed in different ways. (Amelink, C., Scales, G., Tront G. J., 2012).

The article, *How 5 Inspiring Tablet Classrooms Are Changing Education* by Stephen NooNoo (2014), also supports the ideas of maintaining technology in the classroom by giving examples of different types of teachers who are using tablets in their classroom. The article presents ways of how students are able to receive feedback quicker from their teachers by using Google drive, which will allow students to work on their projects in an easier way. The internet allows students to gain research in a faster method. The teachers imply how the tablet has many applications that allow students to be more engaged in what material they are learning about. Applications can be used individually based and also a whole group, which is presented in the article when focusing on students who have disabilities. Students who may have speech impairments participate more when they are given technology because they will be more understood when using the different applications of the tablet (NooNoo, 2014).

Amelink, C. T., Scales, G., & Tront, J. G. (2012). Student use of the Tablet PC: Impact on student learning behaviors. *Advances in Engineering Education*, *3*(1), 1-17.

NOONOO, S. (2014). How 5 Inspiring Tablet Classrooms Are Changing Education. (Cover story). *T H E Journal*, *41*(7), 11-15.

State Academic Standard

One of the Indiana Academic Standards that this project follows is under the writing section within the 1st grade standards that is listed in the hand-writing portion. This sub-point states how children within this grade level should be to, “Write all uppercase (capital) and lowercase letters legibly, and space letters, words, and sentences appropriately” (IDOE, Academic Standards-1.W.2.1 2014). This project focuses on how to develop an alternative keyboard for a specific student for them to be more successful in the classroom. Therefore, we made Becci an alphabetical keyboard that she can use when she is developing sentences, working on spelling, or communicating with her peers or teacher. Within this keyboard, Becci has a shift key to allow her to capitalize letters if she needs to. Also, we provided Becci a space bar as well so she can recognize how to space out the words when developing sentences. She is given different punctuation as well to be add correct grammar within her sentences. This all

connects within the sub-point of this standard on how Becci will be able to use her keyboard to produce letters, words, and sentences correctly. Another sub-point under the writing section that correlates to our project is under *Conventions of Standard English: Grammar and Usage / Capitalization, Punctuation, and Spelling*. The IDOE Academic Standards-1.W.6.2 is split up into three parts that focus on capitalization, punctuation, and spelling. Becci has to be able to capitalize certain words such as names of people or the first words of a sentence. She has to be able to use the create punctuation within different sentences. This goes along with the other sub-point and how they both correlate to the alphabet keyboard that we made for Becci. Becci will also be able to use Write Out Loud along with the keyboard for her to hear the letters, words, and sentences she is typing. This will focus on her phonic awareness of the different letter, which follows under the spelling portion (IDOE Academic Standards-1.W.6.2 2014).

The second Indiana Academic Standards that this project follows is under the math section, which is the computation and algebraic thinking. One of the sub-points, state that students within 1st grade should be able to,

> Demonstrate fluency with addition facts and the corresponding subtraction facts within 20. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13). Understand the role of 0 in addition and subtraction (IDOE Academic Standards-1.CA.1 2014).

This sub-point correlates to the alphabet keyboard that we made for Becci to use in the classroom. On the keyboard are numbers, addition/subtraction signs, and the equals sign. Therefore, Becci will be able to type the numbers and the different types of signs to develop addition facts and subtraction acts. She can create different types of facts by using the Write Out Loud application and it will also speak the numbers as she types them. Another sub-point underneath this section states that students should be able,

> Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false (e.g., Which of the following equations are true and which are false? 6 = 6, 7 = 8 – 1, 5 + 2 = 2 + 5, 4 + 1 = 5 + 2) (IDOE Academic Standards-1.W.CA.6 2014).

This corresponds to the other sub-point and how Becci will use the alphabetical keyboard that provides her numbers separated from the letters. She will be able to work on math problems and to develop different types of facts. She has an

equal sign for her to understand what the meaning is and how she is going to use it to create addition and subtraction facts.

One of the Common Core Standards that correlate to our project is under the Speaking and Listening portion that focuses on comprehension and collaboration. One of the sub-points state that students have to, “Build on others' talk in conversations by responding to the comments of others through multiple exchanges” (CCSS.ELA. Literacy.SL.1.1.B). This can correlate to our project in how we created multiple keyboards for Becci to use for her to be able to communicate and participate in the classroom. She can talk with her peers by using the alphabet keyboard and producing sentences while the Write Out Loud application will speak them for her. She can propose a question or a statement by using the different punctuation provided. She can use the communication keyboard if she wanted to answer yes or no questions. This will allow her to be able to follow the standard and being able to communicate with her peers to promote social skills. Another sub-point under this section states that students have to, “Ask questions to clear up any confusion about the topics and texts under discussion” (CCSS.ELA.Literacy.SL.1.1.C). This sub-point can correlate with the alphabet keyboard, communication keyboard, and her standardized-testing keyboard. The alphabet keyboard allows her to ask questions by using correct punctuation and to be able to communicate with her peers. She is able to use the communication keyboard when speaking with her teacher by saying she needs help on something. On her standardized-testing keyboard, she can ask for the question to be repeated or ask for help, which will allow her to understand of what is being asked.

The second Common Core Standards that correlate to our project is under the Writing portion that focuses on production and distribution of writing. One of the sub-points state that students have to, “With guidance and support from adults, focus on a topic, respond to questions and suggestions from peers, and add details to strengthen writing as needed” (CCSS.ELA. Literacy.W.1.6). This can correlate with our project within the alphabet keyboard and communication keyboard. Becci is able to respond to questions from peers by using the different keyboards and using the WriteOutLoud application to speak the answers for her. She can add different punctuation and capitalization, which will strengthen her sentences to make them grammatically correct. Another sub-point under this portion states that, “With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers” (CCSS.ELA.Literacy.W.1.5). This sub-point can correlate to our project on how we have used different digital tools to help Becci work on sentence development, communication and spelling. Becci will able to use her alphabet keyboard to guide her when she is working on writing skills and learning how to create sentences correctly. She will be able to use WriteOutLoud to help her correct her mistakes and to produce the sentences for her. She can communicate with her peers as well by using her alphabet keyboard to ask questions or to propose a statement; WriteOutLoud will speak for her so that the students understand what she is saying.

Common Core State Standards, (2015). *Standards for grade 1*. Retrieved on October 15, 2015 from http://www.corestandards.org
Indiana Department of Education (IDOE), (2014). *Academic Standards for grade 1*. Retrieved on October 15, 2015 from http://www.doe.in.gov/standards

INTASCS

One of the INTASCS I chose for this artifact is INTASC 1: The teacher understands how learners grow and develop, recognizing that patterns of learning and development vary individually within and across the cognitive, linguistic, social, emotional, and physical areas, and designs and implements developmentally appropriate and challenging learning experiences. Through this project, we had to recognize the strengths and weaknesses of Becci's development and how that was effecting her in the classroom. We had to look at her grade level, abilities, and what her first language was. We perceived how Becci had cerebral palsy and how she tried to use a scribe to help her write. She also displayed a speech impairment which played an effect on how the scribe was not useful and people could not understand her. Becci also lacked self-efficacy because she had someone who was always writing for her, which effected her language development. Therefore, we had to create alternative keyboards for Becci to use in the classroom by using multiple digital tools. We created a communication keyboard, game/social interactive keyboard, talking keyboard, and a standardized testing keyboard by using the Overlay Maker application. The communication keyboard allows Becci to communicate with her teacher and peers because she is able to say what she needs and answer to yes or no questions. The game/social interactive keyboard allows Becci to participate in classroom activities and promotes collaboration with her peers. She is provided different keys that display a function that the game instructions require. The text on the keys were designed for Becci to understand what function was going to be displayed. The talking keyboard provided an alphabet keyboard, numerical keyboard, punctuation marks, addition/subtraction/equals signs, enter key, and a shift key to work on capitalization. Becci is challenged to work on developing sentences and learning how to spell different words. She is also able to create math facts by distinguishing the different signs. The standardized testing keyboard was designed for Becci to take when participating in standardized tests. The keyboard represents letters A, B, C, and D and other statements such as, "I need help", "Please repeat", and "I do not know". This can help promote accuracy within the tests scores and she will be able to take the tests by herself. Each keyboard is adaptive to Becci's learning styles and how she will be challenged to have to do things by herself. She is able to express emotions and how well she understands the material. Becci would use WriteOut Loud with each keyboard because it will speak for her as she presses the buttons and the application can help her correct her mistakes. Each of the keyboards rely

back on the INTASC because they are challenging her in different skills and they are appropriate to her grade level.

Through this INTASC, this project supports how important it is to understand each child's way of learning and how there are different factors that play into what may effect a student's development. In education, students learn differently and some learn more quickly than others. A study was done focusing on children with a learning disability and children without a learning disability. Students who have a learning disability gradually learn throughout school with more support that is needed. This article proposes that students with a learning disability lack positive social behavior unlike students without a learning disability. This can effect how students act in a classroom and play an effect into their education because they may feel as if they are not good enough. Students with a learning disability need extra guidance through school and to feel supported because it will help them grow and succeed socially and cognitively. It is important for students with a learning disability to proceed to receive an education and to interact with other students because it can allow them to have a positive outlook on their selves and what they are capable of achieving (Yukay Yuksel, 2013). This article can reflect on how Becci is able to use the tools we have provided her to express how she understands the content and to also be engaged in different activities with her peers.

The second INTASC I chose for this artifact is INTASC 3: The teacher works with others to create environments that support individual and collaborative learning, and that encourage positive social interaction, active engagement in learning, and self motivation. Through this project, I collaborated with another girl to plan out how we were going to make three alternative keyboards that would assist a little girl named Becci in first grade. We knew were going to use the Overlay Maker Application and Write Out Loud together. Write Out Loud would provide speech for Becci and also type for her as she pressed the different keys. We had to design the keyboards that supported Becci individually, but she could also use them when communicating with her peers and educator. Becci lacked self-efficacy due to having cerebral palsy and not being able to write on her own. Therefore, we wanted to design keyboards that will allow her to do activities individually, which will allow her to see what she is capable of doing. We designed a communication keyboard to allow her to speak with other students and her teacher; which will help people understand her better since she has a speech impairment. This will allow Becci to be more involved in classroom discussion, which will create a positive learning environment. Another keyboard that focuses on this INTASC standard the most is the game/social interactive keyboard because Becci will be able to communicate with her peers and will be actively involved in the classroom activities. This can promote how games can help students be self-motivated because they are in control of what they are doing. Students can play different games that can promote engagement by working together to problem solve on how they are going to succeed. The talking keyboard was designed for Becci to be able to use an alphabet keyboard, numerical keyboard, addition/subtraction/equals signs, and different types of grammar. This keyboard allows Becci to work on different skills such as math,

spelling, sentence structure, and communication. The standardized-testing keyboard allows Becci to participate in standardized tests and to be able to take them without assistance. This will promote accuracy in the testing scores and will allow Becci to here questions again to gain more understanding. Becci will be more engaged by being able to express her emotions and by showing what she knows by using multiple technology.

To support the understanding of playing different games can lead to self-motivation is how the student is in control of their actions and emotions by getting them engaged into another type of world. In the article, *Video Games in Education* (Kurt Squire 2003) provides an outlook such as, “primarily, however, video games elicit powerful emotional reactions in their players, such as fear, power, aggression, wonder, or joy.” Squire proposes how games include different ways of promoting emotions by allowing children to pick their character, barriers to solve, working with peers, and by having a reward system (Squire 2003). This can provide an explanation on how a child can gain self-esteem when playing different types of games and learning how to follow different directions underneath the game requirements. Students can attain how to work with others and to stay engaged in the game.

Squire, K. (2003). Video games in education. *Int. J. Intell. Games & Simulation*, *2*(1), 49-62.

Yukay Yüksel, M. (2013). An investigation of social behaviors of primary school children in terms of their grade, learning disability and intelligence potential. *Kuram Ve Uygulamada Eğitim Bilimleri*, *13*(2), 781-793.