

Jennifer Ivanoff
TechQuest Project

Educational Need:

I am a high school special education teacher. I teach students with disabilities who struggle in most classes. My students are easily bored with traditional classroom settings where they are asked to sit still and copy notes from the board. I need to find a way to keep my students actively engaged and motivated during the lecture part of the lesson. During this time I must make sure students feel safe to express themselves without ridicule.

To measure the success of my educational needs I will assess my students' progress towards meeting individualized education plan (IEP) and statewide objectives. If my students are increasing their scores and/or making progress to their IEP goals I will know that my students are actively engaged during my lessons. I will also give my students a questionnaire regarding the changing in my teaching.

Plan:

I plan to find a way to keep my students actively engaged during classroom instruction. I am going to research the use of student response systems (SRS). This would allow my students to have an active role during lecture part of the lesson and would allow myself, as the teacher, to assess where my students are at a particular point during my lesson. SRS would help me pace my lessons as well as check-for-understanding constantly. A SRS would help me to pace my lessons according to my students needs, and allow me to routinely check for student understanding. By using technology such as SRS my students would be motivated to take part in classroom discussion and instructional time.

Research:

“Please take out your notebook,” are dreaded words for any of my students with disabilities. This is especially true if you are one of my students who have a disability and struggles with taking notes during class. I teach students with special needs within the general education curriculum and these five words have already turned them off to the lesson and the information they are going to be asked to learn.

My students know that the lecture part of the lesson does not typically include anything fun. To my students lecturing is a time when the teacher just says a bunch of stuff, where they do not really know what any of it means nor caring. Students do not see this as a time where they can be a part of the lesson and take an active role in learning. Thus, resulting in the students' lack of motivation and engagement.

My current instructional methods are not working and must be changed. If I expect my student's motivation and engagement to change during lecturing I must change the way I teach. One way to do this is to give students an active role in the classroom. This does not mean a student is assigned a different role or task to do each day, such as taking attendance or washing the whiteboard. According to Joe Cuseo, a professor of psychology at Marymount College in Palos Verde, CA, active learning is “Student involvement in the learning process.” He states that there are three forms of learners or

engagement ranging of learners: passive, moderately active, and very active.”

Passive learners are those who tend to look like they are daydreaming and are not attentive. Moderately active learners are those who may write down what is on the board, but will not ask questions or make comments. Very active are the learners who are taking notes, asking questions, and providing comments (Cuseo, 30 Nov. 2007). My students are most often passive learners. To aid in my students' journey in becoming more active learner during the lecture part of a lesson I refer to Jere Brophy and his twelve principles of teaching. A supportive classroom climate is one of the principles. In order for my students to be willing to take an active role during instruction I must make sure that my students feel my classroom is safe. My classroom must give my students a sense that they are free to share their ideas without ridicule and have appropriate scaffolding and guidance during instruction.

One way that I can help my students engage in scaffolding during my lessons is to have students answer questions throughout the lesson or allow them time to collaborate with their peers on different topics. However, if I do this, it still may be hard for me to identify what information my students know and what information I need to revisit because they did not quite understanding the information. If I wait until a test or quiz it may be too late. I need to find a way to monitor my students' progress during instructional time while I am keeping them motivated and being active learners. I need to find something that will intrigue my students and make them want to come to class. I must look at what other teachers are doing that is working to engage their students in instructional time?

Eric Green, a math teacher at Williamsburg Collegiate Charter School in Brooklyn, NY found a way to make his students “more interested in and dedicated to their work.” He uses a Classroom Performance System (CPS) in his classroom to ask students questions during a lesson. A CPS is commonly referred to as “clickers.” His students use these clickers to answer questions by pushing a button, just like using a remote control or a video game controller, things that are of interest to students. The information the students enter is then sent to the computer where it is displayed and can be a project for his students to see. (CPS + Math Competition +Success) The information presented does not state which students chose which answer, but rather gives an overview of how the class responded. Thus, preventing any student from feeling inadequate in front of his or her peers and keeping a supportive classroom. This information then helps Mr. Green continue with the lesson or modify the lesson to clear up any misunderstandings or confusion. It also gives his students a chance to assess their current level of understanding. From here if students do not understand what is being discussed, he or she can then ask a question. Sometimes students think they understand what is being taught, but in reality they missed a big concept. If a student did not receive any immediate feedback during a lesson, they may leave with a false feeling. In turn, this would cause the student to be very disappointed when he or she did not perform well on the test. ("einstruction)

There are many different products available to check students' progress through the use of a clicker. Another performance system is Student Response Solution (SRS). This

product has had numerous success stories, which have been presented in case studies. Arne Eristory, a high school shop instructor at Fremont High School in Ogden, Utah was struggling with student engagement and discipline problems. He has a tough job of preparing his students for the state and national tests; much like many teachers including myself. It is very important for our students to be prepared for the End of Course (EOC) test and to do well. Mr. Eristory knew the most effective way to reach his students was kinesthetically, where his students could be active in lessons. To review for the state and national exams with his students he created a review game. Each student participated in this review where they answered questions and were provided with immediate feedback. His students were engaged and willing to prepare for their upcoming exam. The clickers gave them the motivation to stay engaged during the lesson. With assistance from the SRS review “his entry-level students performed 20% higher than the state average” (Fremont) and 24 of his 26 students passed the national exam. These numbers prove that the SRS are working for Mr. Eristory’s classroom. (“TurningTechnologies”)

Classroom response systems(CRS), also known as classroom performance system (CPS) or student response solutions (SRS), is a way to motivate students and provide immediate feedback on the teacher posted questions. Teachers can uses CRS to “take attendance, to ensure some level of participation, and to increase the students’ attention during the lecture (Deal).”

There are three categories in which CRS can assist: “presentation and questioning, students response and display, and data management and analysis” (Deal). The main purpose for CRS is to gain technical feedback from student responses. This is done by the teacher posting questions for students to answer. The questions are in the form of True or False or multiple choices. Students select an answer by pushing a button on a “clicker” or a remote. This is the presentation and questioning category.

The student response and display starts when the information the student selects is transported to the teacher’s computer where it is recorded and presented in a graph that is displayed to the class. These visual graphs are ways to encourage class discussion and find where there might be gaps in the student's understanding of the lesson. This is also a good way to reinforce student’s metacognition skills. They are able to see how they answered the question compared to which other peers answered the question. This information creates support for students. Finally, the teacher can revisit this information or data collected during instruction time. This information can help the teacher track students’ progress by exporting and saving student responses. This information can be placed in common Microsoft Office application, such as Excel and can even be used as a course management system, like Blackboard, to track student progress.

I see great benefits of using a CRS in my classroom both for my students and my teaching. I have a few options and/or products that I am considering purchasing. I want to find the best product for my students taking in consideration the type of system, the appearance, and the cost. There are three types of systems; infrared, radio frequency, and Wi-Fi. As I am making my decision it will be important to evaluate the pros and cons of each system type. Infrared systems carry the lowest overall system cost. They use line in

single transportation similar to a remote control for a television set and there are no issues of information being mixed up with information from another classroom. This is important when I must take into consideration that a neighboring teacher may be using similar software in his/her classroom. Some of the disadvantages of the infrared system is they are one-way communicators, so I would not be able to give my students feedback on their individual clicker. Most systems depending on the manufacturer can only support between 40 to 80 responses. Also, individual clickers can get expensive.

Radio frequency systems have an advantage that the receiver does not have to be in sight of the clicker. Therefore, students do not have to point their clicker at the receiver to gain a response. The receiver has a longer range where students can be further from it. With radio frequency systems two-way communication is available. Some disadvantages of using radio frequency systems are that the clickers can be hidden where some students may answer a question two or three times with other students clickers and those other students do not have to participate during the lesson. The cost of radio frequency systems is more expensive than infrared systems and it can be expensive to manage.

The newest CRS are Wi-Fi. For this system answers can be open-ended, where students can type in individual answers. Students can use a variety of different wireless devices, such as cell phones. A few downsides for Wi-Fi systems are that the teacher must have a computing Wi-Fi device and there are fewer products to currently choose from on the market. (Deal)

After comparing the different system types I am able to identify the best system for my classroom. I want my system to encourage student participation and engagement. To do this I feel it is important for me physically to see my students responding to post questions and be able to project their responses on the whiteboard for them to assess. I do not feel that it is necessary for me to communicate to one individual student through his or her individual clicker. I feel that I will gain better classroom discussion if I go over class results with my class as a group, without giving students a heads up prior to classroom discussion.

With this information in mind I know that I want to obtain an infrared CRS system. This system appears to meet my individual classroom needs and is most cost efficient. As I look at infrared systems I am considering three different manufactures, TurningPoint, einstruction, and H-ITT.

TurningPoint's software becomes part of Microsoft PowerPoint, which allows teachers to create PowerPoint's with questions for the students to answer. Then it creates a new slide to reveal the graphical results. With this system there is no new software to learn and is compatible with any computer that contains Microsoft PowerPoint. For me this is a huge plus considering I float classrooms. I need to insure that my CRS will work in each of my classrooms. For a set of 24 clickers it would cost about \$950 with my Wake County School System Discount.



Einstruction system is an easy to use system with long battery life usually lasting 2-3 years. This system using software that is similar to Microsoft PowerPoint, but is unable to transfer information into PowerPoint. This might pose a problem when I am floating between classrooms. This system also has the ability to create individual student reports that can be used for study guides. This would be a helpful resource for my students. It would provide them with a physical piece of paper to take home with them to study. The cost for a set of 24 clickers it would cost about \$1,300.



The least expensive CRS available is H-ITT. H-ITT is able to pick up responses at a wider range than most systems. It comes with two different types of software. One is used to collect data during the class and then other is to assist in organizing the data. Once again I may run into problems with the different software not working on all of the computers since I may work with different computers in different classrooms. For a classroom set of 24 clickers it would cost about \$650.



Going back to what is most important to my individual classroom needs and the needs of my students I feel that it would be best for me to pursue purchasing a CRS from TurningPoint, because it is compatible with Microsoft PowerPoint software that I know is available in all of my classrooms. It is also a system that my county has purchased before. Therefore, if I run into any difficulties I will be able to access different individuals to assist with my integration of the system. Furthermore, the price is at the mid-range. It may be more expensive than H-ITT, but I feel the compatibility with PowerPoint is worth the extra cost in the long run. With such a substantial purchase I want to make sure that I will be able to use it for many years to come.

I also have to take into consideration that my students tend to have difficulties with spelling. If I purchase more advanced devices such as Wi-Fi systems my students could answer open-ended questions, where they would type their answer into their clicker. I feel this would put more pressure on students and they would not be as active in the lesson, which is my ultimate goal, for my students to be engaged during instructional time.

By completing this research I learned that gaining and maintaining student engagement is essential during classroom instructional time. Students need to feel they are safe from ridicule when they are answering questions, and they need immediate feedback. Students are able to feel safe when answering questions by using CRS that allow each student to take an active role during instruction. I also learned that there is more than one type of CRS to use in the classroom and that each CRS has benefits. By researching all the available systems I now understand which system would best fit the needs of my students as well as my teaching skills.

Implications:

I started my search with Michigan State University's electronic resources, such as Exceptional Children and GALE. From here I found useful information that lead me to visit a few of the CRS providers websites where I was able to locate case studies of the different clickers, and even find links to information about grant writing and helpful articles that address the different system devices. I found the TurningTechnology website to be extremely helpful because it provided a link to pertinent articles written by Ashley Dean on CRS.

If I were to perform my research again I would start off by asking co-workers and professors their opinions of the different companies that provide CRS. I would then research those particular systems and their companies. In my initial research I found the CRS websites to be very helpful because they provided excellent resources about grant writing and ways to obtain systems for classrooms.

Plan for this course:

During this course I have researched different forms of technology that research has proven to have a positive outcomes to gain and keep students engaged. Case studies have provided positive feedback and examples in which teachers have already used SRS in their classrooms. I have identified the type of SRS that would best suit my student's needs as well as my own needs as a teacher. I have identified that I wish to obtain SRS from TurningPoint.

As this class comes to an end I still have not achieved my goal or obtaining SRS for my classroom. I will continue to research different grants that I would be eligible for. I want to find the best funding source to provide my classroom with SRS. I am a member of Donors Choose that is a free resource to help provide teachers with needed material for their classrooms. The way the system works I am not able to ask for a request that is so costly at first. I must earn points that I can earn through obtaining other items from donors and returning thank you's. If I use Donor Choose I will have to wait until I am able to earn points before I can ask for a donor to purchase SRS from TurningPoints. I am also looking into different grants for North Carolina as well as grants that are specifically for my county. My search for a grant is going to continue after I finish my Educational Technology Certificate.

Common places of education:

- 1) Someone teaching – For the lecture part of a lesson teachers can create a PowerPoint presentation to project onto a whiteboard or screen to give students a visual of the lesson. Teachers will use this technology to maintain student engagement by allows them to answer questions that are posted by the teacher. A visual representation of the data collected will then be projected for the class to see. The teacher can then use this information to pace the lesson to insure each student has a good understanding of the material presented. SRS are a great way for teachers to check-for-understanding.
- 2) Someone learning - Students will be able to take an active role during the lesson. They will be able to answer questions through the use of a "clicker" and receive immediate feedback on those questions. This feedback will be provided by a visual representation of

the student's responses that is projected into a graph on the whiteboard or projector. The information students provide assist with the pace of the lesson. By using SRS students gain more control of during the lecture part of a lesson.

3) Subject Matter: Electronic student response systems can be use across content. It can be used in science classes during practice problems. In English, history, and computer classes students can be asked questions to respond to before the teacher moves onto new content. I would use SRS in my algebra-I class during guided practice when my students are asked to answer a math problem. I would provide three or four possible answers for students to choose from. From my students responses I would be able to guide the reset of the lesson to suit the needs of my students.

4) Setting: In order to use electronic student response systems the appropriate technology is necessary. Before purchasing the actual system you need to have a computer and a projector. Once you purchase the system you also be provided with corresponding software depending on the system.

Implementation Journal

My TechQuest journey has been an educational experience. I started my journey with very little direction and became lost. As I was able to gain a better understanding of what my TechQuest should entail I became excited about the positive results I would find.

As I researched different ways to engage students during lecture time I found that SRS were producing great results. At this time I was unaware of the many different types of SRS that are available. This came as a surprise to me. I thought that I may have one or two to choose from but most SRS providers have three different SRS they sell. This gives me many options. Throughout my research I was able to identify the exact system that would meet my students needs as well as my own needs as a teacher. This was a hug step in the right direction when I was completing my TechQuest.

Another surprise for me was the realization that it is not a practical goal to find proper funding for the SRS that I wish to have in my classroom this year. I started out this project with high hopes of gaining a great resource to engage my students in lecture this school year. Now, it is looking like I will be applying for a grant that is due next year. However, I am not giving up hope that I will be able to obtain a set of SRS for my students to take an active role during my lectures.

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