Using Lesson Overview Videos to Enhance Science and Social Studies Instruction

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I teach four different blocks of STEM (Science, Technology, Engineering, and Mathematics) coursework daily. In my second block of the day, I have 4 students who receive special education services. These students drop their things off at their desks and immediately go to the special education teacher for the first 45 minutes of class. They miss all of the notes and background instruction that takes place during this time. They come back with about 30 minutes of class time remaining and jump right into the investigative activities and experiments without receiving any of the background knowledge to which the class has been introduced. They are very confused and have no idea what they are doing. The teacher becomes frustrated because she has to stop her small group instruction in order to get them situated and explain things to them. The other students also become irritated as these students don’t have the knowledge they need to understand what is going on and contribute to the group. These special education students just get further and further behind.

Question

Will the use of brief lesson overview videos for special education students enhance my teaching of Science and Social Studies?
School Background

The question was investigated in an action research project occurring in a 5th grade classroom at XX Elementary School. XX Elementary is a K-5 school in smaller city school system. The school has approximately 590 students, 51% male and 49% female. There are 38 teachers and the student to teacher ratio is a little above the state average at 16:1. School XX is not designated as a Title I school so it does not receive any federal funds. 28% Of the students, 28% receive a free or reduced lunch. The racial make up of this school is mostly Caucasian and African American with 66.4% Caucasian and 28.6% African American. Asian American students make up about 3.4% of the population followed by Hispanics at 1.2% and Indians at 0.3% of the student population. Of the 5th grade students at XX School, 95% pass the state proficiency test (ARMT) in both Reading and Mathematics.

Plan

I believe that the special education students in my class are capable of doing what all the other students in my class can do if they are given the proper background knowledge. By having a routine that they follow each day, the teacher will be less frustrated and science will be much more enjoyable for them as they will understand why they are doing the investigative activities. The solution I have is to create brief 5-minute videos for each lesson that overview and emphasize the main points for that day’s lesson. Upon returning from their special education teacher, students will know to immediately come in and go straight to the computer with a notes sheet to watch the day’s lesson overview and complete the notes sheet. The students will then glue their notes sheet in their science notebooks and immediately join their group for the investigative activity. This will allow them to feel a sense of responsibility and provide a structure that is much needed. The teacher will be able to continue to work with small groups and know that at the same time, these students are getting the information needed. I will pretest the students and then begin my research and implementation. At the end, I will posttest the students to see if the videos and notes helped their grades to improve (see Table 1).

Table 1

Implementation Timeline

<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>October 25, 2013</td>
<td>Observe daily classroom routine of special education students</td>
</tr>
<tr>
<td>October 20, 2013</td>
<td>Record test scores without implementing videos/notes</td>
</tr>
<tr>
<td>November 6, 2013</td>
<td>Introduce First Video to Special Education students when they return to the classroom. Review of The Scientific Method for test tomorrow. Post on Edmodo.</td>
</tr>
<tr>
<td>Date</td>
<td>Activity</td>
</tr>
<tr>
<td>-------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>November 7, 2013</td>
<td>Test on Scientific Method  Record scores.</td>
</tr>
<tr>
<td>November 8, 2013</td>
<td>No new material- ASSEMBLY</td>
</tr>
<tr>
<td>November 13, 2013</td>
<td>Video on Lesson 1 Introducing Pendulums</td>
</tr>
<tr>
<td>November 14, 2013</td>
<td>Video on Lesson 2 Overview on Pendulums</td>
</tr>
<tr>
<td>November 15, 2013</td>
<td>Have students review over L1 and L2 Pendulum Videos Collect Worksheet as Grade</td>
</tr>
<tr>
<td>November 19, 2013</td>
<td>Lesson 1 Overview Intro to 13 Colonies (Maps)</td>
</tr>
<tr>
<td>November 20, 2013</td>
<td>Lesson 2 Overview (13 Colonies industry/daily life/etc)</td>
</tr>
<tr>
<td>November 21, 2013</td>
<td>Test Review Video Posted to Edmodo.</td>
</tr>
<tr>
<td>November 22, 2013</td>
<td>Test on 13 Colonies. Record Scores. Interview student on his/her experience with the videos. (Do you understand your experiments and activities better now after watching the videos?)</td>
</tr>
</tbody>
</table>

**Action Research Literature Review**

The first article I have found was in *MERLOT Journal of Online and Teaching* and is titled Instructor-Made Videos as a Learner Scaffolding Tool (Pan, Sen, Starrett, Bonk, Rodgers, Tikoo & Powell, 2012). This was a study done to see if instructor-made videos (IMV) have an effect on student learning. An instructor-made video is about 3-10 minutes in length and covers subject matter areas and problematic topics. Videos incorporate multimedia resources that, when integrated effectively, create a powerful teaching and learning tool. The study found that videos serve as an effective way to motivate learners, maintain their attention, and provide satisfaction in what they are doing.

Another positive of IMV is that it is learner controlled according to Pan et al. The learner becomes active in the lesson and is able to pause, stop, skip, and rewind sections of the video to review content until understanding is achieved. The IMV’s allow the teacher to scaffold learning for students. The study concluded that IMV’s are effective as students are learning through watching demonstrations, illustrations and ideas being presented (Pan et al, 2012). This method allows students to see and hear examples that may be difficult to understand by just reading the text.
Using technology to enhance learning also is addressed *Meaningful Connections, Using Technology in Primary Classrooms* (Murphy, DePasquale & McNamara, 2003). Dr. Karen L Murphy, a professor at Wheelock College in Boston, Massachusetts and her co-authors, talk about technology’s place in the classroom. She says that “Technology is a tool, and as such it should be selected because it is the best tool for the job.” In order for technology to be a powerful contributor of learning, it must be used to deepen student’s engagement in meaningful and authentic instruction. When used correctly, technology can be an effective tool for English language learners and students with disabilities.

In order for students to be able to effectively use technology, they must be taught how to do so. Students will learn this usage in the same way they learn everything else, in their own time. By the primary years, however, students can begin to use familiar technology tools as part of their academic programs. It is important for teachers to model appropriate use of technology for our students. This will allow children to see firsthand the purpose of technology and the benefits of it (Murphy, et al, 2003).

Enhancing learning through technology is also addressed in *The Effect of Context-Based Video Instruction on Learning and Motivation in Online Courses* (Choi & Johnson, 2005). This study found learners reported that video-based instruction was more memorable to them than traditional text-based instruction. They concluded that context-based videos in classes have the potential to enhance learners’ motivation and retention. The study cites Baggett in saying that information obtained visually is more memorable. The study also cites Komza as supporting this conclusion, stating that simultaneous processing of auditory and visual information may aid in learning. The study showed that most participants perceived that video-based learning instruction was more effective when it came to remembering content, keeping learners focused and actively involved.

A report commissioned from Cisco Systems Inc to Wainhouse Research, LLC and titled *The Impact of Broadcast and Streaming Video in Education* (Greenberg & Zanetis, 2012) stated that videos have a great impact in education. The learner is interactive with the content. Learners relate to visual content by note taking, thinking, or applying concepts. The learner also is engaged. There is a connection to the visual content with the video drawing learners in. Greater knowledge transfer and memorization is possible. The learner may remember and retain concepts better than with traditional learning methods. Videos in education enhance students’ academic performance according to Greenberg and Zanetis. Grades and performance are improved, students have improved collaborative abilities, and students are more prepared to go into the workforce. By using videos in the classroom, students are more motivated, more engaged, and become digital and multimedia literate.

Finally, Greenberg and Zanetis (2012) state that research indicates children today are different from previous generations in the ways that they think and in the ways that they access, absorb, interpret, process, and use information but most of all, in the ways they view, interact, and communicate in the modern world. Students today are much more visual-spatial learners who are able to multitask and interact with multimedia. In
conclusion, the use of videos is an essential tool that can have a powerful impact on student engagement and retention of information.

Data Analysis

From looking at the test scores of my students (see Tables 2 and 3), my strategy of using short instructional videos helped play a role in increasing students’ understanding of the topic. The test scores gradually improved for Student 1 and increased slightly for Student 2. When looking at the overall class averages for each 9-week period, I could clearly see improvement. We started the short instructional videos right at the beginning of the 2nd 9-week period. The class average for Student 1 rose a whole letter grade from a 78 to an 83. Student 2’s class average also raised an entire letter grade, from a 70 to an 81. I also conducted brief student interviews on the use of these videos and both seemed to enjoy them. Students said the videos really helped them remember what was discussed in class. The data tell me that this teaching strategy is working and is helping students.

Table 2

Test Scores
Conclusion

From my data, I have concluded that using brief lesson overview videos for special education students enhances my teaching of science and social studies. I was not, however, prepared for the changes that would have to be made to make this plan run effectively. My original method had to be tweaked after the first day when we decided that making videos on what would be addressed in class was too risky. There was no way to tell just how far each class would get. We did not want to confuse students so, we decided to shift and make lesson review videos on the previous day’s lesson while leading in to what students would learn that day in class. Students would then go watch these during their time with the special education teacher and come to class refreshed on the content and ready to learn.

Through my research I found valuable information that motivated me to carry out this plan and in the end, I had some of the same findings that were found in the literature reviewed about IMV’s. My findings matched well with those reported in Instructor-Made Videos as a Learner Scaffolding Tool (Pan, Sen, Starrett, Bonk, Rodgers, Tikoo & Powell, 2012). These authors talk about the benefits resulting when the learner is able to

Table 3

Class Averages
control and stop, rewind, and pause videos. The authors also stated that IMV’s allow for students to see and hear examples that may be difficult to understand by just reading the text. I found similar results through my research this semester. My students benefitted from being able to have some control in their learning and because they were low readers, the videos allowed them to learn more than can be done by just reading text.
I can conclude that my teaching improved as making these videos helped me break down the material and put it in terms that students would better understand. I expected students test scores to rise but not necessarily by entire letter grades. It was exciting to see that these review videos helped students better remember the content being taught as was evident in the tests they took along the way. Definitely, I would like to use my method again. It would be important to test for a longer amount of time and on a much broader group of students, maybe even an entire class. I might assign it as a homework assignment or play a video at the beginning of class each day for a quick review in order to lead into the new lesson for the day.

References


