CEP 810

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Analysis of a Technology Innovation in the Classroom Applying Technology to a Problem of Practice in Education

The Jason Project (**www.jason.org**) is a nonprofit organization that supplies an amazing science experience and curriculum through real world applications and project based learning as a way to teach and get students to think and analyze about science and the world around them. The program is designed for 5th through 8th graders but the program can be revised to meet the needs of students in younger and older grades. The Jason Mission Center is an online community that allows teachers and students to explore science and bring it to life in the classroom.

The educational opportunity that this project seeks to address is to encourage and motivate students to learn about science through real world, hands on, and interactive activities. There are a multitude of digital experiences used so that students are engaged and active in their learning. Students become immersed in their learning through an inquiry-based curriculum involving podcasts, videos, webcasts, lab and field assignments, and interactive games. This is an amazing opportunity for students to speak to great explorers and researchers and learn about cutting edge research. Technology integration is an important factor because it is the main resource for accessing all the information and for interacting with others and the experiments/explorations. I would know if I was successful with using this resource by reflecting on summative and formal assessment of the students and by reflecting on my own teaching. The Jason Project has assessment tools available for teachers to use at

http://www.jason.org/gated/assessments/find.aspx. I can use the assessment tools available or I can create my own assessments as well. I would use pre and post tests, quizzes, blogging, participation, and I would also look at my students' performance on hands on activities, field and lab assignments and cooperative learning skills. I would also be interacting with my students on a daily basis asking them open-ended thought provoking questions so that I could determine the effectiveness of my teaching. My assessments would guide my instruction so when students were unclear about an objective that I have taught, I would use different strategies to help students grasp the concepts.

There are many important characteristics related to this project. *The teacher* has a very crucial role in the success of this technology application. The teacher needs to establish a classroom community on the Jason Mission Center website and create an account for each student. Through the creation of the classroom community, all students can explore and use the resources at school or at home. After creating the classroom community, the teacher needs to decide on the academic and life goals that he/she wants to accomplish through this program. The teacher needs to decide on which materials to order, he/she needs to plan & prepare lesson plans to fit the goals, manage the time and resources students will be using, and tailor the lessons to meet the needs of the students' age and abilities. The teacher should also create an exciting and encouraging learning environment so that students are motivated and eager to learn.

I think Brophy's principles of effective teaching play a very important role in the success of this innovation. The teacher is responsible for *creating a supportive classroom community* where all students feel safe and comfortable to make mistakes and learn from them when using the technology resources. The teacher should *create the opportunity to learn* especially in making the technology accessible to all students. It is also important to *align the curriculum* with the standards and goals you have for science and to focus on the objectives that need to be reached not on using the technology. The teacher should establish *cooperative learning* and encourage students to work together on activities and As well as having *goal oriented assessment, high achievement expectations* and *strategy teaching* including *scaffolding* and inquiry and project based learning. Brophy's teaching strategies are very important to emphasize when teaching with technology because you want to continue using your best teaching practices.

The learner needs to be motivated and excited to learn. The learner has to be responsible for completing assignments, journals, field and lab assignments and class participation. The learner needs to be an active member by asking questions, feeling comfortable taking chances, understanding cooperative work and understand and participating in discussions. Students should also be comfortable navigating through the website and have basic typing skills.

The subject matter is aligned to state and national standards and is also supported by the National Science Teachers Association (NSTA). The Jason Project also works with National Geographic and NASA. There are many professional development opportunities available so that teachers can enhance their use and effectiveness of the program. There are 3 different missions as well as a future mission coming out in 2010. The three missions are: Operation: Monster Storms (weather), Operation: Resilient Planet (ecology), and Operation: Infinite Potential (energy). The Jason Project will soon have a mission for Geology as well. This curriculum is very thorough, thought provoking and interactive while aligning with state and national science standards.

The setting for the implementation of this technology will mostly take place in the classroom. Students can also access The Jason Project and Mission Center from their home or library where they can further explore the resources and have more time to complete assignments or reflect in their journals. It would also be helpful, if the school has the resource, to use the technology in a science lab where students would have ample workspace to complete field and lab assignments.

This innovation can be used throughout the entire school year or teachers can choose to use it for a portion of the year. It is recommended to start using the curriculum at the beginning of the year so that you can maximize the resources available in the program. The innovation will mostly be used in the classroom but students will have access to it with their own personal account so that they can use it at home or in the library. Students and teachers will use The Jason Projects throughout the course of the year at various times depending on how the teacher formats it to fit the needs of his/her class.

The problem of practice teachers can have when teaching science is when they use the didactic/traditional approach. Giving students information and lecturing them about science topics does not make it relevant, fascinating, or hands on so students don't become involved in the learning. Reading out of a book as students follow along is not the best teaching practice when teaching the science curriculum. By using The Jason Project & Mission Center, the teacher and students become active members in researching, investigating, and learning about real world science. By using all the resources available through the Jason Project, teachers are enhancing the experience for the students and applying the knowledge they are learning to real world applications.

I have complete confidence in the technology innovation of The Jason Project. This solution will make a meaningful difference in addressing the educational need of taking the science curriculum to a completely new level. The Jason Project would make science come alive and students would be participating in real world issues and applications that would make a meaningful impact on all students. The Jason Project is based on science standards and the focus is to teach the science objectives. Three questions that are always being considered are, *What are the dynamic systems of Earth and space? How do these systems affect life? What technologies do we use to study these systems, and why?* The focus in not on the use of technology, instead technology is a means to communicate and enhance the curriculum.

There are a multitude of resources and activities available through the Jason Project and Mission Center. Students have access to a digital library, the online curriculum, online articles and activities that include videos and photographs, online interactive games related to the missions, and online journals. Students also have access to message boards where they can learn about the new happenings in the Jason community. Students can post their thoughts about mission projects and meet other students who are active in the program. Argonaut Challenges are also available for students to encourage them to complete projects that would be applicable to the real world and that can actually make a difference and be shared around the world.

(http://www.jason.org/gated/challenge/ChallengeHome.aspx)

Teachers have a very extensive amount of resources at their disposal. They can access the online curriculum including the message boards, videos, and students' journals. Teachers can use the digital library, lesson builder, assessment builder, and reports. Teachers have access to the interactive events and can easily align the NSTA standards with state and district standards. There are videos, animations, photographs, and interdisciplinary connections available to the teacher as well. All the missions include very well thought out lesson plans that include preparation work, reference to Teacher Edition pages, motivation, support materials to download, outline for teaching the lesson and supporting materials, videos, meeting researchers, video guiding questions, assessments, and follow up ideas. There is so much information to work with and you can customize the lesson plans! Everything is connected to the real world and is very relevant. Each mission gives specific objectives, an overview, mission briefing, laboratory, and field assignments. The Jason Project is focused on the curriculum and ways to enhance the teaching of science through technology resources. By using the Jason Project, teachers can move away from the didactic approach and improve their strategies to inquiry and problem based activities, hands on exploration, and higher level thinking.

It is essential to have certain resources for the implementation of this project in

the classroom. The teacher and students need to have daily access to the Internet in the classroom. To maximize the effectiveness of the Jason Project, a teacher should use a SMARTBoard and have a group of computers to use in the classroom or access to a computer lab. The Jason Project states, "*The minimum system requirements are a PC running Windows 2000 or higher or a Macintosh running MacOS 10.2 or higher. The computer must have at least 256 MB of RAM and 15 MB free hard-drive space; a connection to the Internet; and either Internet Explorer 6 or higher, Firefox 1.5 or higher, or Safari 2 or higher. Cookies and JavaScript must both be enabled in your browser. Screen resolution should be set to 1024 x 768 or better. Adobe Flash 8, Apple Quicktime 7, and Adobe Acrobat Reader plug-ins are recommended for the best experience.*" (http://www.jason.org/Public/AboutUS/FAQ.aspx)

I have not implemented this solution into my classroom yet nor do I know anyone personally who has implemented The Jason Project into the classroom. I did find reports from ERIC, Jason Academy, and EDC that state findings about the implementation of The Jason Project in the classroom. In the report, *Stories from Schools Participating in the Jason Project*, the findings are very positive. Teachers found the curriculum to be adaptable so that they could tailor it to their students' needs. They found that they were changing their teaching practices and were using more project-based learning including hands on activities. Teachers did say that they think the effectiveness depends on the teacher and in the approach they take to implementing the project into the classroom. Teachers stated, "Students are able to grasp concretely complex science concepts." One difficult to implement the program if the teachers are not given adequate time, technology resources, or if they are pressured to teach to the state tests. There were also very positive reviews discussed in *The Jason Project's Multimedia Science Curriculum Impact on Student Learning Report*. The Jason project impacts and changes teaching practice, increases teachers' use of technology, and students consistently score above average. They found that the hands on and exploration activities were engaging and that the curriculum is relevant and addresses real world issues. *"Students acquired scientific inquiry and analytical*

negative teachers found was that the district and schools can make it more

skills and outperformed non-Jason students." 57.1% of teachers that

participated in the Jason Academy found that they learned new science content

that they can teach to their students. (Jason Academy Summative Evaluation

Program)

Findings for Center for Children and Technology: Jason Multimedia Science Curriculum's Impact on Student Learning: Final Evaluation Report: 6 MAIN THEMES REPORTED:

JMSC influenced students' perceptions of scientists, doing science, and being scientists.

Hands-on activities from the print curriculum supported student engagement and motivation, helping students be able to grasp complex scientific ideas by making them concrete.

Multidisciplinary components of the JMSC provided coherence in students' learning through capturing their interest and providing opportunities for collaboration.

Students appreciated the variety of experiences and access to knowledge that the multimedia components (videos, Live Broadcast, digital labs, Internet research, and other online activities) provided them; students claimed the affordances of multimedia helped them learn better.

Students with varying literacy levels were able to access complex scientific concepts.

JMSC use resulted in an understanding of key JASON XIV scientific content, concepts, and technologies.

I found these claims to be very close to my feelings towards the project. I agree that the effectiveness of the program greatly depends on the teacher. The teacher, as in any teaching scenario, the teacher makes or breaks the effectiveness of any program implementation. The teacher establishes the classroom environment, the excitement for learning, and the high expectations for the students. Students respond to hands on, inquiry and project based learning that is being encouraged through The Jason Project. I agree that students would score above average and learn higher-level thinking and analytical skills through this process. I find the Jason Project to be an exceptional technology innovation that is available to teachers for free!

The success of a technological innovation in education, like The Jason Project, is based on many factors. One of the most important factors for the success of the program is the effectiveness of the teacher implementing the program. Technology innovation also needs to be supported by the administration at the school and the school district. Teachers need to feel supported and given adequate resources so that they have the opportunity to be successful.

I definitely plan on using a variation of this project in my own classroom setting. I plan on revising the lessons to better fit the needs of my third graders since the program is designed for students in grades 5th through 8th. I think I would use the energy mission, Operation: Infinite Potential so that I am aligning the program with California state science standards for third grade. There is an extensive amount of information and resources on The Jason Project and Mission Center websites, so I would implement this program by including modeling, whole group lessons and guided instruction. I am eager to implement this technology innovation into my classroom. I have struggled in the past with preparing enough hands-on and project-based activities for my students when it comes to the science curriculum. I am amazed to learn about The Jason Project because of all the opportunities if offers me for teaching science effectively in the classroom.