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Running Head: SHARING THE STAGE: HOW CONSTRUCTIVISM HELPS
STUDENTS TRANSFER KNOWLEDGE INTO PRACTICAL APPLICATION

Sharing the Stage: How Constructivism Helps Students
Transfer Knowledge into Practical Application.

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INTRODUCTION

Much like an actor continually acquires new tools to perform different techniques on stage, educators too, should search for tools to add to their repertoire of teaching practices. One technique is not sufficient to use for every performance, and one teaching method should not be considered sufficient for teaching all topics and meeting all standards. Teachers spend too much time in most classes delivering content; time that can be better spent helping students actively identify the uses of the content, increase understanding, or identify why the learning matters to them. Moving content learning out of class moves the teacher from the traditional pedagogy of delivering content in the classroom and expecting students to apply it outside of the classroom, to facilitating the application of content under the guidance of the teacher during class. Students are more likely to learn content and applications if they see what they can do with the information and skills, why these uses matter to them and others, and how these applications can be applied to settings.

If the traditional teaching methods are not resulting in increased understanding, better approaches must be considered. This paper addresses the disconnect between knowledge and transfer in today's learner, and explores how implementing a constructivist learning environment grounded in increased student activity, engagement, collaboration, and the use of technology can improve conceptual understanding through practical application.

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DESCRIBING THE PROBLEM CONTEXT

The Associate in Science Degree in Dental Hygiene at Moreno Valley College, Moreno Valley, CA, is a two-year program available to students whom have completed the required prerequisite classes. A registered dental hygienist (RDH) is a licensed health care professional, oral health educator, and clinician who, as a co-therapist with the dentist, provides preventive, educational, and therapeutic services supporting total health for the control of oral diseases and the promotion of oral health (ADHA). Current dental hygiene education and accreditation standards mandating that “graduates be competent in critical thinking and problem solving related to comprehensive care” reflect a genuine need to enrich students’ preparation in critical thinking and decision- making (Behar-Horenstein, 2006).

Much of today’s curricula have emphasized memory rather than understanding. Students are expected to memorize facts and most tests assess the student’s ability to remember the facts learned rather than understanding the information (Bransford et al, 2000, pg. 8). This may have allowed a student to be successful when taking one or two prerequisite classes but when the student is taking 16 units per semester as in our program knowledge of a large set of disconnected facts is not sufficient. Memorization occurs when the learner makes little or no effort to relate new information to existing knowledge or situations. Students in the dental hygiene program will require more than memorization skills; they will need to know how to think, how to make decisions, how to learn, and how to apply knowledge in a variety of contexts. Skills such as the ability to listen and communicate, the capacity to think critically, evaluate situations, solve

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problems, and make decisions are identified by our program as desirable skills for students to be successful.

As the dental hygiene teaching staff continues to assess student learning, results of assessments and evaluations indicate areas for further development and growth. Specifically, gaps in the students' ability to transfer their classroom learning and apply these skills and knowledge within the clinical environment. This is demonstrated when the students are unable to recall simple concepts and the faculty are required to repeatedly help the students' with the thought process when seeing patients in the clinical setting. Curricular evaluations and assessments indicate students are learning the course material, however, the performance of these same students when evaluated within the clinical environment shows decreased levels of their skills, knowledge and application to the patient.

The need to support development of transferable knowledge in the curriculum by improving educational strategies beyond the traditional techniques continues to be stressed (Whipp, 2000). The program competencies for entry into dental hygiene incorporate the need for dental hygienist to be effective critical thinkers, however, implementation of critical thinking design, in didactic courses, to encourage good clinical judgment is limited.

How do students learn best? Do students learn better when someone tells them exactly how to do something, or do they learn better by doing it themselves? Many people are right in the middle of those two scenarios. This has led many educators to believe that the best way to learn is having students construct their own knowledge instead of having someone construct it for them. The Constructivist Learning Theory

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states that learning is an active process of creating meaning from different experiences. In other words, students will learn best by trying to make sense of something on their own facilitated by the teacher as a guide to help them along the way.

LITERATURE REVIEW

Research on learning and the transference of knowledge into practical application has revealed important principles for structuring learning experiences that enable people to use what they have learned into new settings. By limiting the opportunities to understand, students are unable to transfer learned facts to authentic situations. To more effectively explore the issues surrounding the transference of cognitive knowledge into practical application, a subset of literature has been selected based on its relevance to the following: cognitive knowledge; practical application; and learning theories on how to transfer cognitive knowledge into practical application.

Cognitive Knowledge

Cognition is defined as the act of knowing, and cognitive psychology is the study of all human activities related to knowledge. These activities include attention, creativity, memory, perception, problem solving, thinking, and the use of language (Norman, 1980; Newell and Simon, 1972).

In the last three or four decades the revolution in the study of the mind has had important implications for education. Cognitive science, from its inception, has approached learning from multiple perspectives that include neuroscience, philosophy, linguistics, developmental psychology, anthropology, and several branches of psychology (Norman, 1980; Newell and Simon, 1972). In the most general sense, the current view of

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learning is that people construct new knowledge and understanding based on the interplay between what is already known (prior knowledge) and the nature of their new experiences (Piaget, 1952, Vygotsky, 1962).

With education reform, much of the current pedagogy is now based on “constructivism” (Russell, 1999). Constructivism is a learning theory that suggests that we understand the world through cognitive structuring (Piaget, 1952) and through reflecting on our experiences (Dewey, 1916). Constructivism suggests that learning is a search for meaning through cognitive restructuring. Learning is understanding and its focus on the process of knowing (Piaget, 1978, Vygotsky, 1978).

Constructivist learning theories derive from Piaget’s theory of intellectual development. Understanding the role of experience in school learning come from Dewey’s seminal work on how to structure learning experiences in schools.

Cognitive structures, Learning and Development

Jean Piaget was one of the most renowned researchers in the area of developmental psychology during the 20th century. Piaget was mainly interested in the biological influences and cognitive experiences that result in the construction of knowledge. He described intelligence as a form of adaptation, wherein knowledge is constructed by each individual through the supportive processes of assimilation, accommodation, and equilibration (Piaget, 1947). Assimilation involves integration of new events into preexisting cognitive structures. Accommodation is changing existing structures to match the new information. The balance between the two creates an equilibrium that enables the learner to construct new mental schemes to understand

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reality. There are many types of equilibrium that vary with the levels of development and the problems to be solved (Lavatelli, 1973).

Learners need to explore, to manipulate, to experiment, to question, and to search out answers for themselves – activity is essential. Piaget’s theory is founded on the idea that the developing child actively and adaptively organizes information into groups of interrelated ideas called schemes or concepts. When learners respond to physical experiences within his or her environment, they must either assimilate it into an existing scheme or create an entirely new scheme to deal with (Wadsworth, 1996).

Piaget argued that intellectual development occurs in four distinct stages (Evans, 1973). During the **sensori-motor** stage (birth – 2 years old), Piaget observed that intelligence was demonstrated through motor activity without the use of symbols. Knowledge of the world is limited, but developing, because it is based on experiences and physical interactions. Children transform reflect behaviors into skills and abilities such as looking, sucking, grasping, moving, and listening. The **preoperational** stage (toddler and early childhood) is where “thought” emerges in the form of symbols, which are based on their concrete experiences with the world. Intelligence forms through the use of symbols, language skills, and memory and imagination. During the **concrete operations** stage (elementary and early adolescence, intelligence is demonstrated through logical and systematic manipulation of symbols related to concrete objects. Children are able to use deductive reasoning and can differentiate their perspective from that of other people. As children develop into the **formal operation** stage (adolescence and adulthood) intelligence is demonstrated through the logical use of symbols related to

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abstract concepts. Adolescents begin to establish whole systems of belief and can engage in more reflective reasoning.

Piaget (1973, pg. 20) said, “to understand is to discover, or reconstruct by rediscovery, and such conditions must be complied with if in the future individuals are to be formed who are capable of production and creativity and not simply repetition.”

Learning is much more meaningful if the child is allowed to operate on the world rather than listen to a teacher lecture. Effective instruction from a Piaget perspective would involve having the teacher provide students with materials, situations, and occasions that allow them to create new understanding. This educational approach is consistent with the work of John Dewey who emphasized the experiential aspects of learning.

Learning, Experience, and Schooling

Dewey’s learning theory focuses on how people learn and the nature of knowledge. Dewey was an American philosopher during the late nineteenth and early twentieth centuries. He began his career as a high school teacher developing into a Hegelian idealist. Over time, Dewey moved away from idealism and chose an “experimentalism” approach to learning (Craig, 2008). This approach is about how learners construct knowledge for themselves; constructing meaning equals learning. Dewey believed that learning is the result of our reflections on our experiences; as we strive to make sense of them. Dewey said, “to learn from experience is to make a backward and forward connection between what we do to things and what we enjoy or suffer from things in consequence. In this situation, doing becomes trying; an experiment with the world to find out what it is like; the undergoing becomes instruction - discovery

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of the connection of things. That there is an intimate and necessary relation between the processes of actual experience and education” (Dewey, 1938, pg. 20).

Dewey posed the following questions,

- “How many students acquired special skills by means of automatic drill so that the power of judgment and capacity to act intelligently in new situations was limited?
- How many lost the impetus to learn because of the way in which learning was experienced?
- How many came to associate the learning process with ennui and boredom?
- How many found what they did learn was so foreign to the situations of life outside the school as to give them no power of control over the latter?
- How many came to associate books with dull drudgery, so that they were “conditioned” to all but flashy reading matter?” (Dewey, 1938, pg. 20).

Dewey asked these rhetorical questions not to condemn the education system, but to suggest a focus on the quality of learning experiences. Dewey believed that learning depends on the quality of these experiences. Learning is not the passive acceptance of knowledge. If we follow the work of Dewey, students need educational experiences beyond just listening and writing notes.

People learn how to learn or develop metacognitive skills as they learn. Learning consists both of constructing meaning and constructing systems of meaning. Through our encounters with the world and our reflections upon these experiences, our current understandings of the world are transformed so that things make more sense. Our understandings become broader and more coordinated, helping us to gain greater

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meaning from our experiences (Russell, 1999). The crucial action of constructing meaning is mental; it happens in the mind. Physical actions, i.e. hands-on experiences may be necessary for learning but they are not sufficient. Dewey suggested, that schooling should provide activities that engage the mind as well as the hands. Dewey called this reflective activity.

Dewey described learning as a social activity; our learning is intimately associated with our connection with peers and teachers. “Learning is contextual; we do not learn isolated facts and theories in some abstract land of the mind separate from the rest of our lives; we learn in relationship to what else we know, what we believe, our prejudices and our fears” (Dewey, 1938, pg. 38).

One needs knowledge to learn: it is not possible to assimilate new knowledge without having some structure developed from previous knowledge to build on (Dewey, 1938). The more we know, the more we can learn. Therefore, any effort to teach must be connected to the state of the learner and must provide a path into the subject for the learner based on that learner’s previous knowledge. Dewey asserted, that for significant learning we need to revisit ideas, ponder them, try them out, play with them and use them in authentic situations (Dewey, 1916).

Modern Schooling and Learning

There is widespread concern about the failures of our schools and our society to help students learn to think more effectively, and to help them develop effective problem solving, reasoning and learning skills (Bransford, Goldman, & Vye, 1991). One area of concern is the nations poor test scores and the need to teach thinking skills (Carpenter, 1980). Research has shown poor performance on the simplest word problems even when

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the student had memorized facts from their textbooks (Vanderbuilt, 1990). Many argue that the current curricula of memorization of facts and the acquisition of isolated sub skills that are learned out of context result in knowledge that cannot be applied to authentic situations (Brown et al, 1989).

Alternatives to learning out of context material and fact memorization include an emphasis on generating or constructing learning around authentic tasks that often involve group discussions (Brown, et al., 1989). An authentic task is defined as the relationship between the learning and the social situation in which it occurs (Lave, Wenger, 2005, pg. 14). The practical application of the lesson is significant, purposeful, and helps the student understand how it is applied outside of the textbook. “The constructivist view of learning is a constructive process in which the learner is building an internal representation of knowledge and a personal interpretation of experience” (Duffy, & Jonassen, 1992, pg. 21). These researchers suggest that students need to focus on learning skills that include critical thinking and problem solving, creativity and innovation, and communication and collaboration (21stcenturyskills.org). So how do we take cognitive knowledge and transfer it to practical applications?

Learning in and through Social Contexts

Lave & Wenger are social anthropologist with a strong interest in social theory, and suggest that learning is embedded within activity, context, and culture. Much of their work focused on the re-conceiving of learning, learners, and educational institutions in terms of social practice (Wenger, 1998). Learning often takes place at the edges of the community through participation to gain membership to the community. Lave and Wenger (1991) call this a process of “legitimate peripheral participation.” Knowledge

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needs to be presented in authentic contexts, settings, and situations that would normally involve that knowledge. Social interaction and collaboration are essential components of situated learning; learners become involved in a “community of practice” that embodies certain beliefs and behaviors to be acquired (Lave, & Wenger, 1991). As the beginner or novice moves from the periphery of a community to its center, he or she becomes more active and engaged within the culture and eventually assumes the role of an expert (Lave, et al, 1991). Situated learning is related to Vygotsky’s notion of learning through social development.

Lave and Wenger state the following important points of the situated learning theory (legitimate peripheral participation):

- Knowledge needs to be presented in an authentic context, i.e., settings and applications would normally involve that knowledge.
- Learning requires social interaction and collaboration.
- The participation is legitimate because all individuals accept the position that there are novices that are potential members of the community of practice.
 - Community of practice: are groups of people that share a concern or a passion for something they do and learn how to do it better as they interact regularly. You can’t force this to occur.
- Peripheral because novices are around the edges of “what is the center of the action” and as they learned, gain more skills of the community of practice, they are entrusted with more important roles (Lave, et al, 1991).

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- Participation because it is through “doing” the knowledge that they actually acquire it. The knowledge is situated with the practices of the community of practice (Lesser, 2011).

Situated learning and constructivism are mutually supportive of each other.

Learning is doing therefore students need to be given activities that allow them to collaborate and utilize the information being presented in the classroom. Learning methods, embedded in authentic situations is essential; students need to be given authentic tasks that take place in real-world settings (Lave, 1991).

Summary

Learning, especially in the school setting, is often faced with tasks that do not have apparent meaning or logic and has emphasized memory rather than understanding. Constructivism is a pedagogical view that can be applied to most if not all learning goals (Duffy, & Jonassen, 1992). A constructivist environment emphasizes that each learner through his or her own learning experience constructs knowledge (Dewey, 1938). Additionally there is a focus on the authenticity in any learning environment or process results from presenting “a range of opportunities and challenges in which members of a community could assume different roles and learn through negotiation and interaction about how others perform their roles” (Allen, 1991).

Situated learning and constructivism are mutually supportive of each other. The discussion board and wikis are collaborative tools that have been shown to provide an avenue for learners to evaluate, analyze and reflect on new knowledge (Friesen, 2004). Learning is successful when students can demonstrate conceptual understanding through practical application. The literature suggest that a constructivist learning theory would be

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most relevant when your educational goal is the transfer of cognitive knowledge into practical application.

RESEARCH

Research Question

Will designing a constructivist learning environment provide the student with activities that allow them to collaborate and utilize the information being presented in class, that incorporates social and situated learning methodologies, help them increase their understanding so they can apply their knowledge in patient care?

Research Design

The purpose of my action research is to learn how to increase student understanding by examining the theory of constructivism and related research to explore how knowledge can be used to enhance learning in the dental hygiene program. I begin with an overview of current research based on the theory. This is followed by the introduction of three cycles, which utilizes a systematic recurring method of planning, action, analyzing, evaluating and reflecting (Riel, et al, n.d.). Two cycles introduced social and situated learning activities and the third cycle is faculty observing the student demonstrating that knowledge in patient care. This form of research allows me to analyze, evaluate and improve my teaching practice with the purpose of generating knowledge.

One of the first things a teacher must do when considering how to teach students is to acknowledge that each student does not learn in the same way. This means that if I choose just one style of teaching (lecture, inquiry learning, collaborative learning, etc.),

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the students will not be maximizing their learning potential. I cannot reach every student on the same level during each class, but implementing a variety of learning styles throughout the course allows the students to learn in at least one way that matches their learning style.

I am a part-time faculty member with the MVC Dental Hygiene Program. The spring of 2011 was my first semester of teaching and I have to admit I taught the same way I had been taught in the past: Lecture, class discussion and the dreaded test. After entering the Master of Arts Learning Technologies program and researching the theories of learning a profound transformation has taken place within myself. With my new focus on how people learn I have designed a whole new learning environment based on the constructivist learning theory. Some of the guiding principles that I have implemented are all predicated on the belief that learners construct knowledge for themselves, and each learner individually and socially construct meaning as she or he learns.

CYCLE ONE – SETTING THE STAGE

Research Question

The question's for cycle one is, " will weekly group discussion boards lead to a better understanding of information presented in DEH-16 Preventive Dentistry and will situated learning activities in small groups increase student communication with one another making it easier for students to share their understanding of the concepts discussed in this class?" The situated learning activities created for this cycle:

Role-playing, having the students' do a video on the different toothbrushing methods.

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Creating a website that the students could use in clinic to educate their patients on oral health.

The outcome I wanted was for the students to understand that an important aspect of learning is for the student to be able to communicate what they know, or think they know. This means being able to verbalize their own knowledge so that they can learn more efficiently. When trust is established between community members, it makes it easier for students to share experiences with one another, they benefit from hearing their classmates explanations on concepts being explained from different points of view and in ways that might be closer to the students way of thinking. When students listen effectively they generate questions to further everybody's thinking and learning.

Action

Taking the knowledge I gained from my literature review I first implemented the discussion board. I spent time researching the type of environment I wanted to create, including:

A social environment where students collaborate and are engaged with their peers and can process and synthesize information.

An environment, where the students are engaged in learning and are creating meaning for themselves.

Developing learning activities that involve active participation where students can gain new knowledge.

The students were introduced to the discussion board on the first day of class and I explained its purpose. It is important to know that these students are in their first semester of the dental hygiene program and they have no basic knowledge of dental hygiene to draw upon. I don't believe the students have ever used the discussion board

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before. Some of the students embraced it and some did not. I also explained what the video and website activities would entail.

The discussion board was set up to discuss the basic concepts and topics addressed in class and the textbook. At the end of the course, the students were asked to complete a six question survey to obtain their thoughts and opinions on the use of the discussion board, website, and videos and did it allow them to expand their knowledge and/or strengthen their understanding.

Evaluations

The students were required, as a part of their grade, to participate on the discussion board weekly by responding to my post and the post of two of their classmates. The discussion board was not embraced by all of the students. Each week I made a post asking the students to share their knowledge on a specific topic that had been reviewed in class. The utilization of the discussion board was to allow the students to get the basic concepts to build upon with the implementation of the website and videos.

The students were asked to produce a video (role playing) applying what they had learned about the various toothbrushing methods available to recommend to their patients. For this activity I briefly shared with the students what the video was to include. I purposely did not give a lot of details because I wanted to see what the students would come up with. The students were put into groups of three, one student would be the patient, one student would be the clinician and the last student would record the activity. The website was implemented midway through the semester. I hadn't planned on implementing this activity but I felt it would provide the students the ability to build on their basic knowledge and to develop resources for future learning and problem solving.

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Evidence

Discussion Board

The depth of understanding exhibited was important in the assessment process. The range was from no understanding to minimum-to-moderate knowledge. The discussion board was designed to help the student attain a basic understanding of the information presented in class. The way the discussion board and the concepts were designed had an impact on the depth of knowledge and demonstrated the students increased understanding as the discussion progressed.

Video Activity

The video assignment was designed to allow the students to display their knowledge of the different toothbrushing methods in authentic contexts - settings and situations that would normally involve that knowledge. Social interaction and collaboration were essential components of this situated learning activity. The students were divided into groups of three. Each group was assigned a different toothbrushing method to demonstrate on a video. Purposely, the activity was presented with limited guidelines. I wanted to see how creative the student's would be and if they would be able to apply what they have learned. The students chose to record the video in a clinic setting. One student was the clinician, one was the patient, and the third recorded the demonstration. The students surpassed my expectations! The video's demonstrated the knowledge attained and their deep understanding of the methods studied. . The video is available here: <http://goo.gl/IWIwm>

Student Created Website

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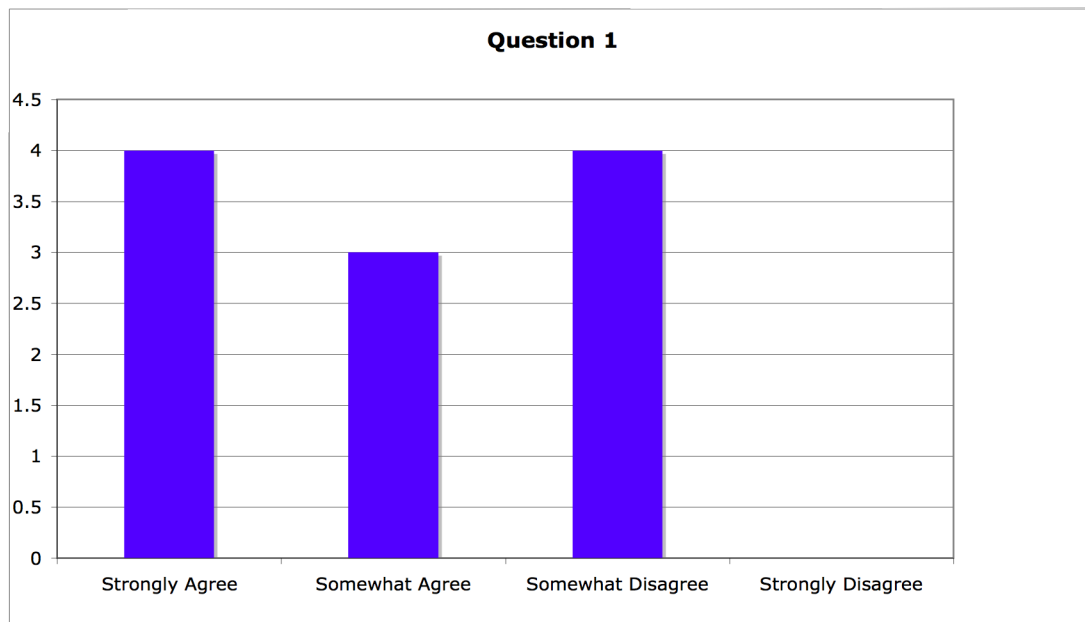
This was a project the students worked on the second half of the semester. It was designed to further expand on the basic knowledge attained on the discussion board and class lectures. I wanted to present the student with opportunities for learning with a view to helping the students build on prior knowledge and understand how to construct new knowledge from authentic experiences. Learning is successful when students can demonstrate conceptual understanding.

The purpose of the project was to create a website that the student's could use during clinic to help educate their patients' on oral hygiene. The students were given four previously discussed topics: Flossing, fluoride, orthodontics and toothbrushing. The information they gathered was posted on the discussion board. As they came to a consensus on what information to present, the students transferred the information to web pages. Originally, a website shell was going to be provided but I decided to see what the students would create researching this on their own. Again, the students performed well beyond what I thought they were capable of. The website displayed the depth of knowledge and deep understanding on the topics researched. It is important to note here that the students demonstrated their cognitive knowledge in passing their quizzes and exams. The website assessed their ability to apply the information. To view click on the link below: <https://sites.google.com/site/mvcdentalhygiene2013/>

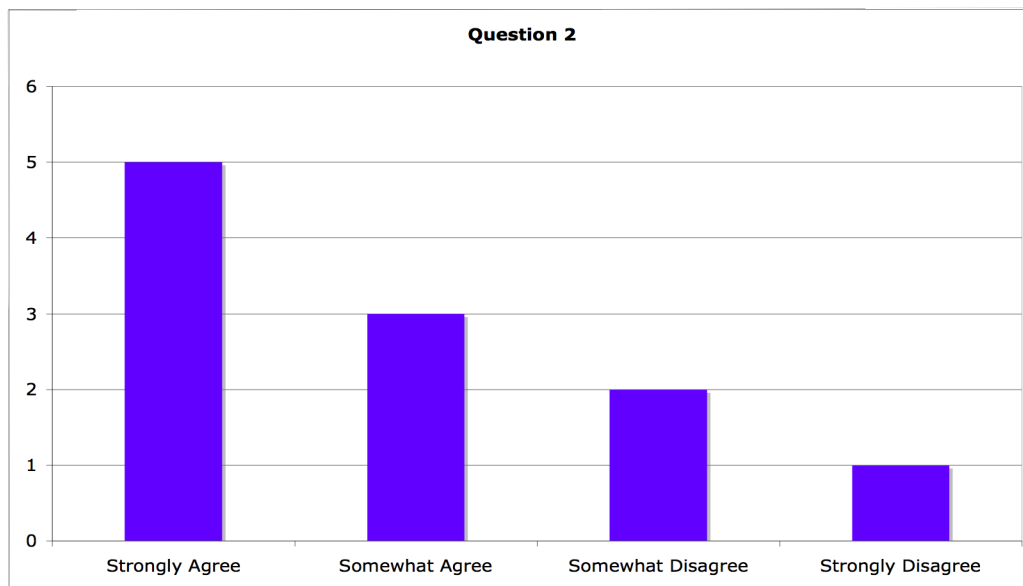
At the conclusion of DEH-16 Preventive Dentistry, the students were given a six-question survey. The response (100 percent response rate) to the questions produced mixed results. The following represents the results of the student survey on three questions.

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Question #1: Do you feel your work on the discussion board allowed you to strengthen your understanding of the information presented in class?

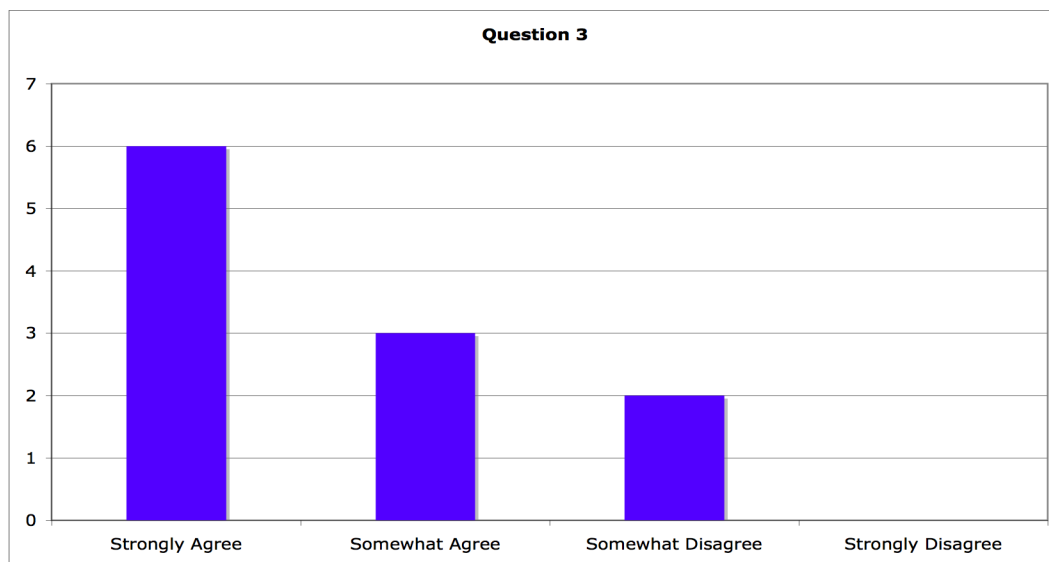


Question #2: Do you feel your work on the class website project allowed you to strengthen your understanding of Preventive topics?



Question #3: Do you feel the toothbrushing video activity allowed you to demonstrate your knowledge on this specific Preventive topic?

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Additional student comments on the survey represent the differing perceptions on the activities introduced. Here are a few examples of student comments:

- I feel like a more traditional approach of emphasizing on lecture and discussion in class would have been more beneficial. The discussion board was extremely time consuming.
- By role playing it helped me get a sense of what it will be like when I cover oral hygiene instructions with my patient and help me better prepare for it.
- Being able to research topics related to preventive really allowed me to learn.
- The website was helpful because we went more into depth on individual topics as a group and it helped me to learn. When we put all the group information together it was good to read and learn about the other topics.
- The website encouraged me to go to outside sources to learn new information.
- The website was definitely a lot of work, but very rewarding in the end. Through my research I not only learned new things but it allowed me to have a better understanding of the material. It was also helpful to look at my other classmate's research and learn from that as well.

Reflection on the Discussion Board

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Students come to the classroom with preconceptions about how the world works. If their initial understanding is not engaged, they may fail to grasp the new concepts and information that are taught, or they may learn them for purposes of a test but revert to their preconceptions outside the classroom. When the discussion board was introduced, everyone did not embrace it. It was difficult to get some of the students to participate regardless of my request. After a few bumps in the road, there was weekly participation by the entire class. My general impression is that the students gained a better understanding of the concepts presented in class because of the implementation of the discussion board. I did not realize how much additional time this activity would entail for me personally. It took so much time thinking about the types of questions that I could ask that would lead to more effective discussions and encourage the students to think critically about the concepts being learned. In order for the students to gain insight into their learning and their understanding, frequent feedback by me was critical. The learning process includes making mistakes but what I realized was the students perceived this as negative. By the completion of this course the students have now embraced making a mistake because they now understand that is when they learn and grow the most.

It was interesting looking at the survey the students filled out. Four students felt strongly that the discussion board helped them gain a deeper understanding of the concepts introduced, three students felt it helped somewhat and four students somewhat disagreed that it helped. All of the additional comments except for one wrote that the discussion board helped them learn the concepts. The students contradict themselves on the same question. I am not sure how I am to interpret this contradictory information.

Reflection on the Video Activity

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This situated learning activity accomplished the goal of seeing if the students could demonstrate their knowledge. I need to implement more activities that include video demonstrations because the students were engaged, collaborating with one another, and having fun.

Reflection on the Student Created Website

Learners of all ages are more motivated when they can see the usefulness of what they are learning and when they can use that information to do something that has an impact on others – especially their local community. My goal for the website project was to enable the students to:

- Learn to experience (see and act on) the world in a new way

- Gain the potential to join and collaborate with their classmates and patients

- Develop resources for future learning and problem solving

- Create a design space that engages and manipulates people in certain ways and in turn create certain relationships with each other and with their patients

The challenge, however, was making sure the task wasn't too difficult that it would cause frustration. This was a huge undertaking and was worth a third of their grade. The students again thought this was time consuming but they were motivated because the project was a substantial part of their grade. I watched to see if the students motivation on the website would start high and then dissipate as the novelty wore off. What I found was that the students were working harder, collaborating with one another, and becoming a community of learners. Students worked on their group topics during lunch, they stayed after school and even interviewed doctors during their free time. At the conclusion of the project the students were very proud of their website and said it was

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very rewarding. The website demonstrated the students being able to transfer their knowledge into practical application.

Although I have had some success in implementing the learning activities I introduced to the students, I need to do a more thorough job of explaining it's intent. When reflecting back on my own experience in MALT, I felt uncomfortable sharing my thoughts and needed to know why we were doing things. I realize I was putting the students in the same position during this cycle. I had them engage in knowledge building through the discussion board, yet, they had no idea how to approach the problem nor why they were doing it.

In the beginning I was nervous about moving myself out of the center of the classroom and sharing the stage with the students'. I wasn't sure the learning environment I was designing would enhance the students learning. Designing a constructivist learning environment does not dismiss my active role of being the teacher, but it does modify that role, so that I can help students to construct knowledge rather than to reproduce a series of facts. I was surprised to find out that the students did not embrace this new learning environment, however, as time went on, things turned around.

I have found that the most capable students are not necessarily the ones who are able to solve complex problems. As a result, I plan to work on the student's problem solving techniques and critical thinking skills throughout the year so they can be more successful.

CYCLE TWO – REHEARSING

Research Question

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If I implement the wiki this semester, will it increase the students' understanding of the concepts being presented in the Medically Compromised Patient class?

During cycle one, the student survey revealed that 36% percent of the students did not feel that the discussion board strengthened their understanding and felt it was repetitive. For cycle two, I implemented the wiki to allow the students to continue to build knowledge together and increase their understanding of the concepts being discussed using a different format. Assessment of this activity was based on a minimum weekly contribution. Students put their names after each of their entries, which made it easier to verify.

Action

The students were introduced to the wiki the first day of class and I explained its purpose. Participation was high from its inception. At the end of the course, the students again were asked to complete a survey to obtain their opinions on the use of the wiki and how it allowed them to strengthen their understanding.

A wiki home page was created <http://deh-26.wikispaces.com/>, and served as a table of contents that included an introduction to the wiki, its purpose and links to a series of 29 pages for specific topics. Each page represented a chapter and the medical problem discussed in that chapter. I provided an outline, which covered the learning outcomes, for the students to fill-in that included the following:

- Definition of the disease
- Incidence and Prevalence
- Etiology
- Pathophysiology and Complications
- Signs and Symptoms

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- Laboratory Findings
- Medical Management
- Dental Management
- Treatment Planning Considerations
- Oral Manifestations

At the end of the page after the students' post, I had case scenarios to allow the students to demonstrate their understanding of the concepts. Students were provided with guidance on the basic concepts that should be covered in their posts and were encouraged to research each medical condition from multiple resources and to include videos and pictures to help one another with understanding. They were also encouraged to post questions if they needed clarification on specific areas. Students were assessed individually rather than as a group, and by demonstrating their knowledge of the content.

Evaluations

The students were required to read the assigned chapter(s) and display their knowledge on the wiki weekly before the start of class. This allowed the students to come to class with a basic knowledge of the material and during lecture we could expand on what they had learned. This is not what occurred and class participation was minimal. The information the students presented on the wiki was accurate and complete. The students posted detailed pictures and informative videos but I did not see this knowledge or understanding demonstrated during class. When I began researching why there was a disconnect between the wiki and class participation I learned that the students were taking short cuts. Most of the students were not reading the assigned chapters and just going to the textbook to answer a specific section of the topic we were studying.

Practical Application

This semester the students began seeing patients in clinic. One student had a patient that had been exposed to Hepatitis B and the student stated she didn't know anything about hepatitis B despite having a wiki page completely filled out on Hepatitis. This means that the student(s) weren't reading the wiki to be able to apply what they have learned into clinic.

It was time to switch things up. I had originally put up an outline on the wiki pages to guide the students in synthesizing the information presented. I informed the students in class that they would be responsible for deciding the important concepts for the remaining chapters and I sent the following e-mail to the class:

Hi Class of 2013,

This week in class we are going to switch things up. I will be posting the lecture notes after class. I will not be lecturing. By Friday's class, you all have already read the chapters and posted to your wiki. So class will consist of you displaying your knowledge and understanding of the material. Be prepared to answer questions individually on the concepts such as the definition, signs and symptoms, the etiology, medical and dental management, and treatment planning. There are four chapters. This will be fun and I will be there as a guide to help you along the way.

In the first two weeks the students did well covering all the important concepts but the level of knowledge decreased on the remainder of the chapters. I would post questions to encourage the students to critically think about the concepts that they were missing. I found that the students did not go back to a page once the topic moved forward.

Evidence

Practical Application

At the conclusion of DEH-26 The Medically Compromised Patient, the students were sent a seven question survey via e-mail. The response rate was 82%, with 9 of 11 students returning their survey via e-mail. The following represents the results of the student survey and additional comments.

Question #1: Has the use of the wiki in The Medically Compromised Patient allowed you to expand your knowledge on each of the assigned chapters?

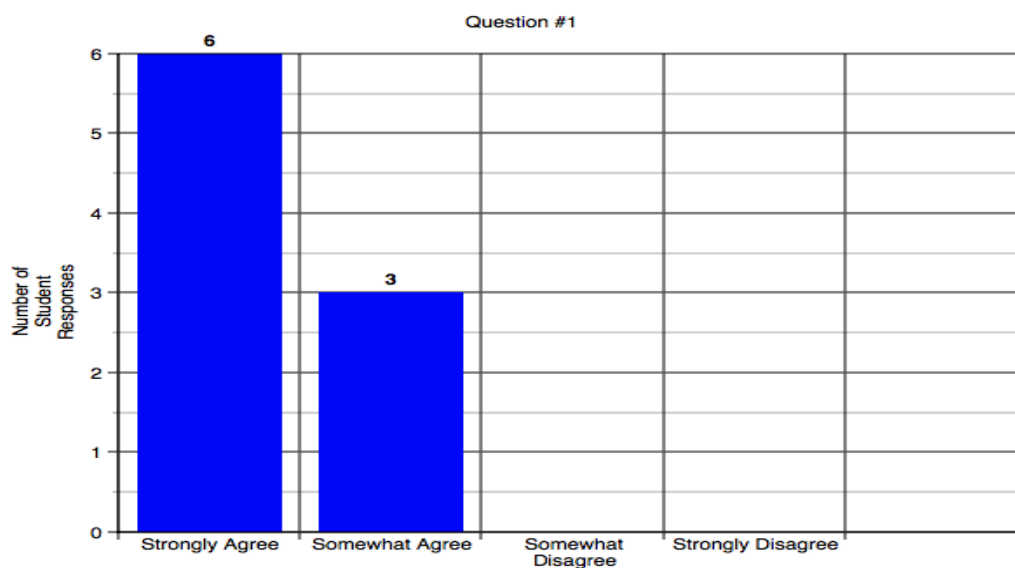


Fig. 1 Student responses to Question #1

Question #2: Do you feel your work on the wiki allowed you to strengthen your understanding of the chapter before discussing the information in class?

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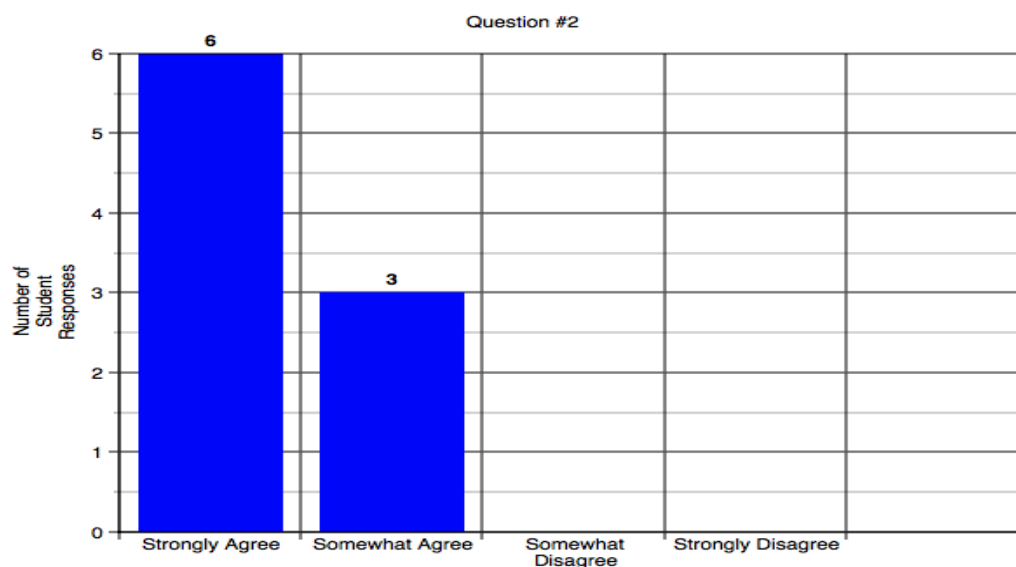


Fig. 2 Student Responses to Question #2

Additional student comments on the use of the wiki:

- I believe that reading before contributing to the wiki has allowed me to process the information that was in the textbook and has allowed a better understanding of the information. I have been using the wiki as a study guide and it has helped tremendously.
- The wiki has allowed me to see topics of discussion from different points of view.
- I think placing pictures were really helpful because it gives you more visual aids so you are not fixed on the ones in the book.
- I enjoyed the wiki. I think I would have gotten more out of it if there were a certain student assigned to each chapter or two people assigned to each chapter.

Each student's submission was retrieved at the completion of the semester. The students posted their name after each posting (including embedded images, animation and video). Eleven students (100%) participated on the wiki. The students created 29 pages of content during 593 editing sessions. Just over half of all edits (56%) involved changes to six or more sentences of text. The degree to which students contributed to the wiki varied

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considerably, with a relatively small number of students (18%) contributing most of the wiki content.

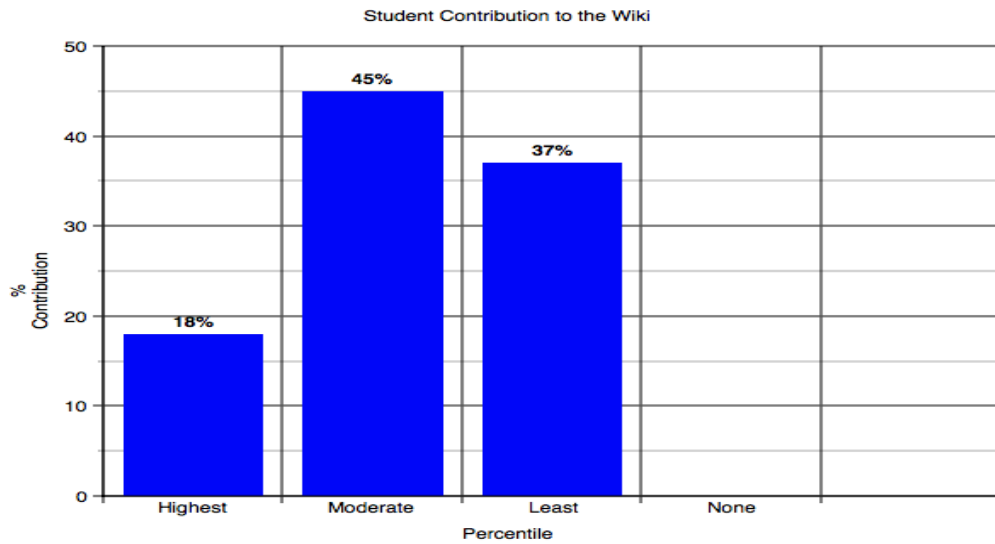


Fig. 3: Proportional contribution of text (based on word counts) of the highest and least productive students.

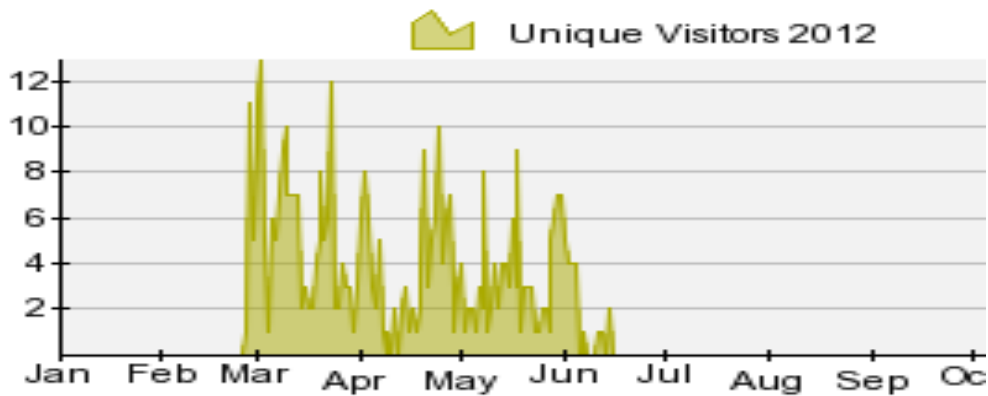


Fig. 4 Wiki Visitors

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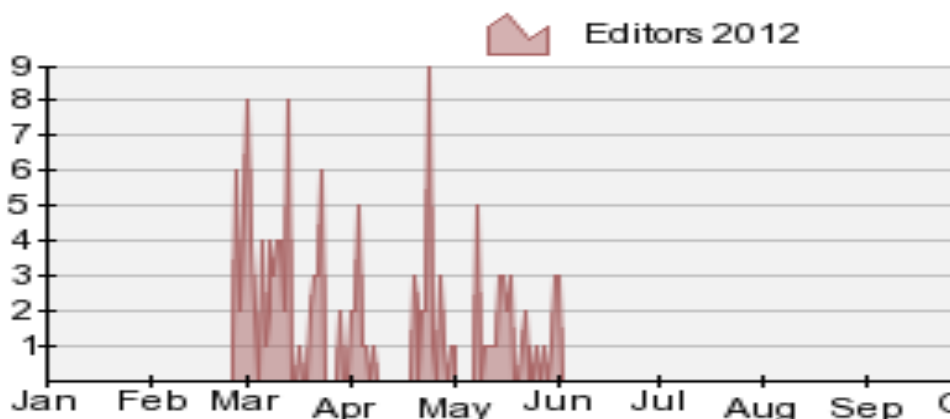


Fig. 5 Edits made to the wiki

I took the last six years (2006-2011) final exam scores from previous classes and compared them to this year’s class to see if the implementation of the wiki improved scores. The final exam included multiple-choice questions and several case scenarios that required the students to demonstrate their knowledge by short answer essays.

Grades	Spring of 2006	Spring of 2007	Spring of 2008	Spring of 2009	Spring of 2010	Spring of 2011	Spring of 2012
A’s	0%	17%	9%	18%	6%	40%	27%
B’s	29%	43%	45%	59%	41%	47%	45%
C’s	57%	43%	45%	12%	41%	13%	27%
D’s	14%	0%	0%	0%	6%	0%	0%
F’s	0%	7%	0%	12%	6%	0%	0%
# of students	14	14	22	17	17	15	11

Fig. 6 Comparison on how classes performed on Final examinations

Practical Application

The chart revealed that there has been an improvement in test scores the last two years. I started teaching the Medically Compromised Patient in the spring of 2011. Comparing the last two years of the classes I taught showed the current class grades had dropped. I don't think the drop in scores represented the implementation of the wiki. I believe the drop in scores can be attributed to the type of learners present in each class. The spring of 2011 students were highly motivated students who actively participated and were engaged in their learning. The spring of 2012 students had five students (45%) who were not actively engaged in their learning. The director sent this e-mail with the survey attached for cycle III but it summarizes these five students accurately.

Hi Debbie,

Here is my survey. I'm fearful that if we are all honest, your results reflect that your project wasn't successful. If we take Nicole, Anurag, Chris, Kenley and Debbie out of the equation - your results would be amazing. These students just don't have the desire to truly learn, process and then incorporate the knowledge into patient care. They just want to get by and say and do the craziest things.

Reflection

During cycle two, I was interested in assessing the degree to which students behaved cooperatively and collaboratively in using the wiki to increase their knowledge and understanding of the material presented in class. I wanted to explore the potential of using the wiki and, in doing so, identified prospective deficiencies in both my learning design and the students' use of wikis.

Practical Application

This was the first time I have used the wiki in my classroom. Wikis are widely promoted as collaborative tools, yet their success or failure strongly depends on the way in which they are designed and how well the students follow the design. Being mindful of such issues when designing the wiki, there was an expectation on my part that students would engage in cooperative and collaborative behavior. Initially, it seemed that my expectations were being met, however, class discussions, or the lack of, painted a very different picture.

All of the students participated on the wiki but the analysis of the equity of students' contributions suggests that many of the students were probably more concerned with simply meeting the weekly requirement, which would require minimal cooperation and collaboration, than developing a deeper understanding of the material and establishing a collaborative relationship with the class. The students were to post by Tuesday and collaborate back and forth before Friday's class. The timing of the students' contributions also revealed a great deal about their willingness to collaborate with other members of their class. I found that once the student made their contribution they did not go back to the wiki again until the next post was due. I also noted that the students' did not comment on one another's work and my attempts to engage the students resulted in them answering the question but they did not elaborate on the subject.

I became frustrated with the lack of class participation and changed things up again by posting the lectures after class. I informed the students that I would be calling on each of them to share their knowledge. By the end of the semester I was finally getting somewhere, the students were engaged and demonstrated how the information we were studying would apply when treating a patient.

Practical Application

A key area where the wiki could have been improved, thereby encouraging more meaningful contributions and collaborative activity on the part of the students, is in my design and the assessment. Biggs (1996) stated that assessments drive student engagement with learning and the constructive alignment recognizes the need to have the learning objectives, its instructional design and assessment integrated closely.

With each cycle of research I am learning more about my teaching practice and myself. Almost half of the eleven students are not able to transfer their knowledge. How do I help students (45%) who are using memorization to embrace the process of learning so they can transfer their knowledge into clinic. When analyzing the data, one could feel discouraged that every student wasn't successful in the transference of knowledge when in clinic, but I had to also look at the successes of what I implemented; 55% of the students displayed a depth of knowledge not seen in first year students (director's comments). I think the implementation of the wiki was successful for the student who was motivated to learn. I need to make adjustments to the wiki and other class activities to help motivate those students who only want to do the minimum to get by.

CYCLE THREE – THE PERFORMANCE

Cycle three took place during the second semester and involved the faculty. I worked alongside the faculty on assessing and evaluating the junior class with their understanding of oral hygiene care attained in Preventive Dentistry. The students have an assessment called a process evaluation for oral hygiene instructions that they must pass when treating their patients. The process evaluation form assesses whether the students are able to transfer their knowledge attained during the first semester in Preventive

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Dentistry and applies it into practical application, the clinical setting that starts in the second semester.

The foundation of the evaluation is to determine individual student competency of the desired learning outcomes. All eleven students passed the Preventive Dentistry course. However, courses usually cover several topics as well as encompass a variety of skills. For example, Preventive Dentistry covered twenty-five major subject areas that required the students to use several different cognitive levels of learning in these areas, such as knowledge, comprehension, and applying that knowledge to assigned projects. The students' final course grade would represent a composite of all these different aspects. A student may do well in several areas but poorly in one or more areas, and still achieve a high grade. Because of all these factors, overall course grades will not usually provide definitive information about how well students can master targeted learning outcomes. From a program perspective, individual course grades also do not provide a clear picture of how well students can retain, integrate, and apply topics across courses or two years of a curriculum, or to actual patient care or practice situations. For all these reasons, overall course grades are not an acceptable measure for assessment and evaluation purposes in the clinical setting.

Student learning is measured in variety of places within our program and by different methods. For example, there are certain skills that students need to possess early on, and our program assesses the extent of student mastery of these skills from the beginning of the program. There are also skills that students would be expected to develop with time and practice; and there are other skills that the students will develop early, but continue to demonstrate progress and sophistication with time.

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In the second semester the students start seeing patients in clinic. This is the first time the students are able to apply what they learned in Preventive Dentistry into practical application or authentic context. At the conclusion of the second semester, the students are required to have completed treatment on eight patients. Multiple, two-hour clinic sessions, overseen by faculty, are needed to complete one patient for the first year student. During each of these appointments the students are required to pass several evaluations (assessments), which includes the oral hygiene instruction evaluation in that the faculty were surveyed on.

The process evaluation form used for this assessment contains 15 items that the students are to perform correctly. For a first year student a 90% score is needed to pass. As a second year student a 100% score is needed to pass. If a student does not pass the first time they can repeat the evaluation on another patient any time during the current semester. The skills the students are to perform correctly include the following:

1. Has patient seated upright and comfortable in the dental chair.
2. Establishes and maintains eye contact throughout process.
3. Determines current knowledge level of patient.
4. Personalizes assessment findings to patient's oral hygiene needs.
5. Builds on patient's knowledge base to better understand his/her current dental health status.
6. Ask patient to demonstrate oral hygiene techniques: toothbrushing, interdental needs and tongue scraping
7. Evaluates technique and gives positive reinforcement.
8. Demonstrates modifications to improve patient's technique and relates it to the needs of the patient.
9. Incorporates additional oral hygiene aids or strategies as needed.

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10. Has patient demonstrate new technique or discuss how he/she will implement strategy.
11. Makes additional modifications as needed.
12. Discusses ways to realistically incorporate new technique or strategy into life cycle
13. Engages patient throughout process.
14. Communicates at the appropriate level to meet patient's needs.
15. Provides patient with reinforcement aids.

The faculty assessment/evaluation enabled me to identify how well I have done at achieving my desired outcome of the students' ability to implement oral hygiene concepts into patient care. It also allows me to develop, plan, and implement improvements in my curriculum when desired outcomes are not fully met.

Research Question

Will the faculty observe the students being able to apply what they learned in Preventive Dentistry by demonstrating their knowledge during oral hygiene instructions when treating their patients in clinic?

Evidence

Five faculty members will be asked to answer a five-question survey created to elicit their perceptions of the students' ability to demonstrate the transference of knowledge attained in preventive dentistry to patient care. Faculty was encouraged to make additional comments.

Evaluations

Student/Faculty Discussion Board

The discussions on the student/faculty discussion board provided conflicting results. Over half, (6 students or 55%), of the junior class did well with oral hygiene

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instructions when educating their patients. These students also reflected often on how they could continually improve - demonstrated by this reflection, “I would like to give better OHI, it was my second time giving oral hygiene instructions during this semester and I would like to present the OHI more “smoothly”, I think that I present the information very choppy. I will try and practice giving OHI out loud to see if this helps me to improve my presentation.”

There are five students who demonstrated very little knowledge when presenting oral hygiene instructions. When asked to reflect on this as a learning opportunity on the discussion board they responded with textbook answers instead of using their own voice. This demonstrated their lack of understanding of the information presented in the preventive dentistry class or that they had memorized the information but had not transferred it.

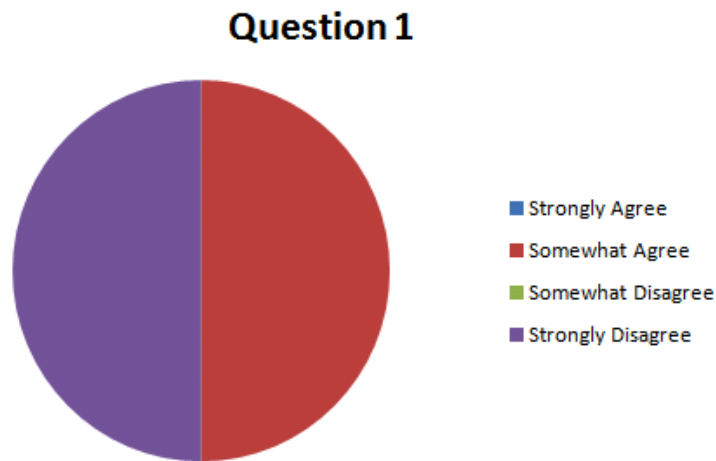
Faculty Survey Results

Five faculty members, two full-time faculty members and three part-time faculty members, were sent a five-question survey through our faculty e-mail. The introduction included a brief description of my action research and what action research entails. I attached the survey questions that addressed the students’ ability to transfer what they learned about oral hygiene during the first semester in the Preventive Dentistry class and the students’ ability to apply it into clinic when seeing patients in the second semester.

Two surveys were returned (40% response rate), one by the director (a full-time faculty member) and one part-time faculty member. The following represents the results of the faculty survey on two of the five questions.

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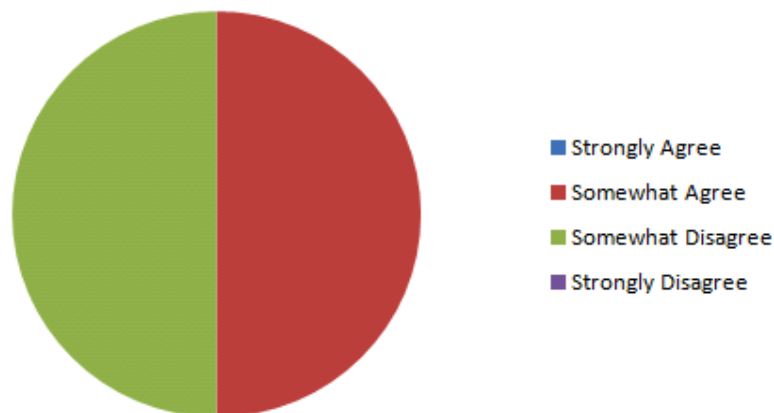
Question #1: Do you feel the Class of 2013 has been thorough in describing the formation and composition of dental biofilm (plaque), it's relationship to oral disease (dental caries and periodontal infection), and specifically the relationship to the patient's present condition?



Question #2: Do you feel the Class of 2013 has an increased understanding of oral hygiene and has been able to demonstrate their knowledge during OH instructions with their patient's?

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Question 2



Additional comments made by the director in response to the survey:

Question #1: Do you feel the Class of 2013 has been thorough in describing the formation and composition of dental biofilm (plaque), it's relationship to oral disease (dental caries and periodontal infection), and specifically the relationship to the patient's present condition?

- This expectation is at a level that is beyond any first year DH student. This is a competency for the completion of the program. It's not until students have treated 20-30 patients that they are able identify the relationship between the patient's oral condition(s) and integrate plaque and oral health into the equation.

Question #2: Do you feel the Class of 2013 has been able to demonstrate their knowledge of the oral hygiene aids available and their indications for use?

- There are a few students who can do this but on the average, my answer is no. When not in clinic and in a didactic setting, more students are able to do this at the expected level. When we get into clinic, there seems to be a disconnect that

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- occurs with most of the students. I've notice that this disconnect is more evident with certain members of the Class of 2013 than I've seen in many years.
- Overall all comment on this action research project: This project has enhanced the learning of many members of the Class of 2013 to a level that I've not seen before in a first year student. It has been a pleasure to see this level of understanding at such an early stage in the program. There is no doubt that this is a direct outcome from your Action Research. Unfortunately, the Class of 2013 has a large number of students who are struggling with understanding that short-term memorization is not the goal of the curriculum which is what they have done up to this point in their educational journey – memorize, take a test, regurgitate the memorize information, forget the information and move forward. These students aren't participating at a level that will allow them to process information that they've memorized into a deeper understanding. Thank you for bringing constructivism into another course in the DH Program. It will provide future students the ability to truly learn the concepts covered in DEH-16 and incorporate this knowledge into patient care.

Reflection

Cycle three involved the students applying what they learned from the first semester into clinic, when seeing patients. This cycle was quite a surprise and a great learning experience for me on several levels. The faculty surveys showed a portion of the students' were able to display an increased level of understanding and there was a portion of the students who could not demonstrate the understanding they demonstrated during the course the previous semester. I also observed this of the students. I observed one student demonstrating how to floss using his patient's fingers? The students are taught to demonstrate a flossing technique on a plastic mouth that represents a patient's dentition. I also observed one of the students explaining oral hygiene to a patients' parent and did an excellent job.

Practical Application

Traditionally, dental hygiene education has relied on a teacher-delivered, lecture-based educational approach along with a performance-based approach in the clinical setting. To increase the students understanding I implemented several blended learning activities in hopes of addressing this disconnect during the first semester in my Preventive Dentistry course. I am learning that the educational strategies I implemented result in discrete, isolated knowledge and performance in the absence of experience, while not implementing enough critical thinking and reasoning skills to the clinical environment, although there were some exceptions. Clinical thinking is characterized as a complex and often unconscious integration of clinical reasoning and data-collecting procedures aimed at patient care (Darby, 2003). The inherent skills required for clinical reasoning include the ability to sort information, recognize relevant patterns, and select key elements within that information. The comment made by the director was correct in that content-specific knowledge and the ability to collect meaningful data increases with experience.

Was I unrealistic in my expectation that the students would be able to demonstrate a high level of understanding when providing oral hygiene instructions? Yes, I did not consider the fact that the students had no real life experience, meaning the students have never been in a patient's mouth before. Pictures, discussion boards, videos and case scenarios and presentations cannot provide the same experience although they can provide pattern recognition and organization of information that is necessary for creating accurate knowledge when treating patients. While the dental hygiene program does focus on teaching students a methodical process for approaching patient care, there still is a

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problem of transferring that knowledge into clinic. I also need to remember that these are first year dental hygiene students.

The differing results from the survey I received addressed another issue of faculty not being on the same level as displayed by my expectation of the first year students in my survey question #1. There are faculty members who pass students regularly with 100% on their assessments while other faculty members require more knowledge demonstration. The students are very aware of this and of course want to be evaluated by the easier faculty members. I believe that the faculty needs to better understand the expectations of what a process evaluation, assessment, and competency looks like for a first year student and a second year student. Additionally, faculty needs to better understand the premises underlying critical thinking and need guidance in methods for fostering good clinical judgment. A study by Behar-Horenstein showed that dental faculty rely primarily on teacher dominated instruction or coaching techniques such as hypothesis generation and questioning to develop critical thinking skills and do so only 2 percent of the time in the clinic setting.

During this cycle I have learned that it is necessary to incorporate more critical thinking and clinical reasoning into my curriculum. This will take a considerable amount of time and there is still some confusion on how to best teach and evaluate critical thinking and clinical reasoning skills. Other metacognitive measures that may have a utility in predicting student performance that I need to look at include motivation, maturity, age groups, and disposition.

I need to implement a backward design when I design my didactic courses by looking at the clinical process evaluations, assessments and competencies and overlap

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them into my learning outcomes where applicable. While this cycle did not provide the outcome I had hoped for it did provide me with the areas I need to change to produce different outcomes for the students. I do think that the students who demonstrated an increased understanding in the clinical setting where the students who were motivated, studied and processed the information they were presented with in Preventive Dentistry at a higher level.

FINAL REFLECTIONS

August 8, 2011 Reflection on Myself (my first post made in the MALT program)

“For a couple of weeks now I have been reading everyone's comments and blogs and I am amazed at how intelligent and reflective everyone is. I felt intimidated. Reflection is NOT easy for me so I have been trying to figure out why. Over the weekend we were at a high school reunion and I was sharing that I started the Pepperdine program. Out of nowhere I started to express to my girlfriend that for most of my life I have always tried to be what I thought everyone expected me to be, a good mother, a good wife, a good daughter, a good friend, and so on. Even when I went back to school at the age of 40, I became the student that I thought the instructors wanted me to be, trying to come up with answers that I thought they wanted to hear. So what does this all mean... it means that this is a struggle. It means I am learning who I really am, **my** thoughts, standing up for **my** beliefs and most importantly struggling with trying to figure that out. Don't get me wrong; I am a strong woman, I just don't know why! Sharing these thoughts and this process with you all makes me feel vulnerable. But I am going to go for it. I am curious to see how I will learn, grow and become a voice.... **my** voice.

I share this with all of you because some of my posts may not be all that riveting as many of yours are. But they will be **my** understanding of the process. I look forward to your input, ideas, and suggestions.”

Debbie

Practical Application

When I started my action research a year ago, I had been recently hired as a part-time faculty member. As a new hire, I spent a lot of time observing my new teaching environment and became energised by my colleagues and the students. There is a weekly faculty discussion thread where the director provides opportunities for participation, inquiry, dialogue, and reflection. I had a lot of questions but I didn't ask them; maybe, it was fear as demonstrated in the post above, or I assumed I was supposed to know the answer. What I observed on the discussion thread was the director posting questions and asking for thoughts from the faculty. The responses were limited and usually they just confirmed what the director was stating without contributing to the conversation.

As noted by Piaget, the success of education ultimately lies with individual instructors and their capacity, individually and collectively, to implement “new ways of doing things” during their day-to-day, hour-by-hour, moment-by-moment interactions with students. During the MALT program I began to understand the importance of collaborating with my peers. I started to contribute to the discussion thread regularly with my own thoughts and ideas. Although most faculty did not participate, the conversations between the director and I provided me with different perspectives; I learned so much more than if I had to sort out these situations on my own. I no longer feel vulnerable, I find joy and stimulation in the daily dilemmas of teaching and I am intrigued by the challenges of improving our program.

As I reflect on this process, I have come to realize that I have changed in so many ways. When I started teaching I became cognizant of the challenges in learning styles. The traditional teaching method I was using, of spoon-feeding the students, placed too

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much emphasis on memorization. The students were prepared for test but I did not prepare them adequately to transfer what they learned into the real-world or the clinical setting.

Over the summer, I began toiling through books on learning theories and related research to explore how this knowledge can be used to enhance learning in my Preventive Dentistry class to first year students. One stream of this research that aligns with our program is focused on the concept of constructivism, where the student through his or her own learning experience constructs meaning. I decided that I would change my style of teaching for my action research project. I knew I had to build communities for constructing knowledge, but I wasn't sure how or what to implement. When we began researching and discussing distributed learning in MALT, my role became clearer.

In cycle one, I implemented the discussion board to increase understanding of the material presented and two learning activities that allowed the students to apply what they were learning. The students did not embrace this shift in the classroom with open arms. They wanted the traditional classroom environment where the teacher is standing center of the stage and constructing their knowledge for them. I stood firm and major changes started to take place during cycle one. The students enjoyed the learning activities and embraced the video project where they got to act, direct and write the scene. The most obvious change was the impact of the design and environment the students demonstrated increased understanding.

In cycle two, the wiki was implemented in the second semester for the Medically Compromised Patient course and was embraced by the students. "There is a need of forming a theory of experience in order that education may be intelligently conducted

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upon the basis of experience” --John Dewey. The students’ were utilizing resources outside of their textbook to post pictures and concepts to further generate knowledge. I started having the students’ go up on stage to share what they had learned. One student shared,

“Although it may have been hard to talk in front of the class at times I feel like doing so has helped my learning. Doing all that we have done through this semester has allowed me to gain more knowledge and I am now able to explain certain diseases in my own words and I feel so good about it. Thank you for helping me to feel more comfortable speaking in front of others. This class has been so fun and I have learned so much.”

Cycles two and three ran concurrently. In cycle three, my focus changed from the students to the faculty. I worked along side the faculty on assessing and evaluating the junior class with their understanding of oral hygiene care attained in Preventive Dentistry. During cycle one and cycle two I was thrilled with the students increased understanding and knowledge building demonstrated on the discussion board, wiki and learning activities. From cycle three, I am learning that the educational strategies I implemented did not accomplish my expected outcome of the students being able to transfer what they have learned into patient care. The faculty response was low and I am partially to blame. I should have involved the faculty earlier on the purpose of my research. Conducting two cycles of research at the same time resulted in cycle three being somewhat disorganized because I concentrated more on the students cycle. However, the director’s comments were very insightful and helped me identify things that I can change in my teaching practice to produce different student outcomes.

Practical Application

I see my role as a teacher evolving. I have learned to apply the theories and experiences from my studies in ways that are valuable and authentic to my own practice. In everything I do, I am guided by my values and shall give it my interest, my enthusiasm, and my passion. I want to maximize the potential of technology to develop students' understanding, stimulate their interest, and increase their proficiency in dental hygiene. I want to move students towards being expert learners who are able to transfer their skills. Cycle three was a humbling experience. I realize that I need to make adjustments in my curriculum so students are able to transfer their knowledge into clinic during patient care.

I have taken on a new role. Recently, I applied for a full time teaching position that became available within our program and was offered the position. I am excited for this amazing opportunity and I am committed to making a difference. At the end of the year, the graduating students gave out faculty awards. I received the Miss Congeniality award. Reflecting on this, I realize that I do not want to be remembered this way. I came across this quote by William Ward. "The mediocre teacher tells. The good teacher explains. The superior teacher demonstrates. The great teacher inspires." I have learned through this process that I want to be remembered as the teacher who inspires all those around me.

At the conclusion of my action research I have come full circle. I have answered my questions by discovering who I am, developing my own voice, and I am no longer intimidated into silence by others. I have become open to learning and understanding the major dimensions of learning in schools: the learning of students, learning of colleagues, learning of self, and learning of my community where I practice.

Practical Application

The final performance of my action research project still needs rehearsing. Departing from the traditional pedagogy where I stood center stage, I have implemented a student-centered classroom where the students stand center stage constructing knowledge for themselves as they learn. Sharing the stage has created not only more successful students but a more successful teacher and learner as well who will continue to focus on improving my practice by continually questioning, changing, reflecting and growing professionally and personally.

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