Running Head: THE PERFECT STORM: TRANSFERRING KNOWLEDGE

The Perfect Storm: Transferring Knowledge to a Deeper Understanding

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Introduction to the Problem

As the director of a Dental Hygiene Program, I work with adult students who are strong academically with a minimum 3.0 GPA. Most of the students have taken one or two prerequisite courses per semester to achieve a 3.0 or higher GPA. The students have mastered the ability to memorize things with short-term memory techniques effectively when taking one or two classes. When they enter the Dental Hygiene Program they are required to take 16 units per semesters and this load is overwhelming to them. The students do not know how to handle the volume of information covered and the short-term memory techniques they've honed over the years are ineffective. This is evident by the stress that students demonstrate and the number of students who fail courses in the program.

This situation worsens dramatically when the students start providing patient care in the Dental Hygiene Clinic. They struggle to recall the simplest of concepts and when it gets to the more advanced concepts, such as Periodontology, faculty have to lead students through the thought process and implementation of concepts repeatedly during patient care. Seldom are students able to demonstrate any depth of knowledge or a deep understanding of concepts in either the classroom or patient care situations.

It is my belief that the majority of dental hygiene students don't achieve competence in understanding periodontal concepts during their two years in the program. It has been my experience that one to two years after graduating, graduates return to tell me they wished they could "re-take" their periodontal courses now that they understand the need for this knowledge. To address the desire for formal knowledge, they attend continuing education courses to obtain

the knowledge needed to have a deep understanding of Periodontology concepts.

The Dental Hygiene Program has a very strong clinical component to allow students the ability to have repetitive experiences on patients. The research indicates that these "real world" experiences allow for formal knowledge from didactic courses to be transformed into informal knowledge with the inclusion of procedural and self-regulatory knowledge that can ultimately be demonstrated through their clinical performance (procedural knowledge) (Bereiter & Scardamalia, 1993). Therefore, due to this strong clinical component and the three courses in Periodontology in the dental hygiene curriculum, it's my belief that the students should be able to obtain a deep understanding of periodontal concepts during the two years in the program.

I have a passion for facilitating the transference of knowledge to a deep understanding. I feel that my position allows me access to all components involved in this action research project including the didactic and clinical environments. It is from this view that I was able to see the three different forces that where colliding equally to produce a perfect storm: 1) students, 2) faculty members and 3) myself.

<div align="center">Purpose of the Research</div>

The purpose of my Action Research is to learn how to increase dental hygiene students' learning with a deeper understanding of the Periodontology concepts being taught in the dental hygiene curricula. For the purposes of this action research project, deeper understanding is being described as the ability to take new or existing information, develop a relatively complex or integrated understanding of a concept, and then demonstrate this knowledge through discussions, treatment plans and communication involving patient care (Bereiter & Scardamalia).

Literature Review

After a thorough review of the literature, it was evident that premise of this action research project would be based on the constructivism learning theory. Constructivist approach to learning emphasizes that each learner through his or her own learning experience constructs knowledge (Bruner). Additionally there is a focus on authentic, challenging projects that include students, teachers and experts in the learning community. This approach and environment matches the learning environment of the dental hygiene curriculum. As the dental hygiene students provide preventive services to the community in the Dental Hygiene Clinic, student are to assume the responsibilities of their own learning, they have to develop metacognitive abilities to monitor and direct their own learning and performance. In this action research project, the creation and relevance of learning communities was not addressed although it is an important component of the constructivism learning theory.

Constructivism also supports the framework for students to work collaboratively in authentic activities where they bring their own framework and perspectives to the activity. Perkins (1991) indicates this student-centered guided learning environment is considered, however, more appropriate for ill-structured domains or higher-level learning, such as the dental hygiene program with its didactic and clinical component to its curriculum. Palincsar and Brown (as cited in Dillenbourg, 1999) call collaborative learning 'a method' since individuals are given instructions to follow with an expected outcome. This concept is going to be followed as the students move into the asynchronous activities on a wiki, discussion board on WebCT, and peer lead educational scenarios.

Research supports (Dillenborug, 1999, Gokhale, 1995, & Tapscott & Williams, 2008) the use of a wiki to incorporate the key elements in collaborative learning and learning for deeper

understanding such as: 1) developing learning activities that involve active participation where individuals gain new information and relate it to a current level of knowledge; 2) allowing the individual to be engaged with his or her peer, process and synthesize information; 3) allowing individuals to benefit from exposure to diverse viewpoints from people with varied backgrounds; 4) provides a social environment that fosters conversation; and 5) providing an environment that challenge the individuals to listen to different perspectives and articulate their thoughts and ideas to others.

It must be noted that the research doesn't state that there is any predictability that collaborative learning will occur just by placing individuals into a collaborative learning environment. Roschelle and Teasley (1995) emphasize that there needs to be a mutual engagement of participants, coordination of different perspectives, shared goal(s), and shared evaluation of activities by students, or students and educators to enhance and facilitate learning.

Another appeal of the wiki is that it can allow the individual to become aware of his or her cognitive style which "determines the tendencies and characteristic style of a person to perceive, process and interpret information for problem-solving purposes" (Sternberg as cited in Liu, Magjuka, & Lee, 2008). This self-awareness may allow a student to better understand how he or she learns so he or she can become a more effective learner. Kennard (2008) found women used wikis more than men. With the overwhelming number of women in the dental hygiene program, this finding reinforces the use of a wiki from a different angle. Lawler (2007) found that the utilization of wikis promotes and reinforces learning, organizational skills, and collaboration of thoughts which aligns with the purpose of this action research project.

The last collaborative learning tool that was researched was asynchronous collaborative learning forums (ACLF) (also known as discussion boards) have been shown to provide an

avenue for learners to analyze, evaluate and reflect on knowledge (Friesen, 2004). Friesen also states that ACLF platforms allows for flexibility, collaboration, reflection and processing of information by learners. The literature confirmed that this would be a viable mechanism to support the transfer of knowledge to a deeper understanding by the dental hygiene students.

Action Research Plan

The literature review that was performed provided me with the knowledge that the design of the environment has a dramatic impact on learning and the ability to engage and challenge students. Effective learning happens when students are interested in the topic, engaged in the learning process, provided with the opportunity to utilize knowledge with hands-on or real world scenarios, and see the relevance of the projects. As the original developer and designer of the 37 courses in the dental hygiene program's curriculum, I can say with confidence that the dental hygiene program curriculum was developed with this intent in mind. Unfortunately, these environmental features were not initially designed into the program and have not been implemented to allow this to occur. This may be one significant explanation as to why students have not been able to take basic concepts and build a deeper understanding of specific concepts.

In order for students to develop a deeper understanding of the periodontal concepts, there needs to be frequent feedback, self-assessments and reflections (Bransford, Brown & Cockling, 2000). Currently self-reflection only exists in the clinical courses. Providing students an avenue for self-reflection about periodontal concepts that they are able to incorporate into patient care may facilitate attainment of a deeper understanding of these concepts.

As stated in the literature review section, research has indicated that the constructivism learning theory that incorporates collaborative, interactive learning activities, such as a wiki and

discussion board, can be used effectively in a community of learners both asynchronously and synchronously. This interactive model can facilitate students' ability to develop a deeper understanding of concepts if the assignments are designed and monitored effectively. The design that I believe is a natural fit for the dental hygiene curriculum is *Understanding by Design* (Wiggins & McTighe). Wikis, discussion boards, and peer lead education scenarios allow for the incorporation of constructivism, informal learning, collaboration, interaction, debate, integration of new ideas and critical thinking through ideas all of which compliment *Understanding by Design*.

<div align="center">Cycle One – Aligning the Students</div>

Research Question

The initial and narrower question for cycle one is "if students utilize a wiki to build, discuss and reflect on periodontal concepts presented in DEH-33 Periodontology will it result in a deeper understanding of the concepts addressed during this class?" This question requires two different target groups to be assessed to measure outcomes: dental hygiene students and clinical faculty members. Students will be assessed to determine the their ability to develop a deeper understanding and faculty will be assessed to determine if they feel students have demonstrated a deeper understanding of Periodontal concepts.

Action Taken

With the knowledge gained from the literature review, the following actions were taken: 1) incorporation of a wiki into DEH-33 Periodontology; and 2) introduction of the concept of a wiki to the students and it purpose in learning. It turned out that no student had ever used a wiki for educational or any other reason so some were reluctant to embrace its incorporation into the course.

DEH-33 Periodontology was selected as the first course in this action research project since it is the second in the trilogy of periodontal courses. Students will have read and discussed basic concepts prior to starting this class. A wiki site was developed on the wikispaces.com, http://dlesser.wikispaces.com/.   The framework of the site was put together for the students that included specific periodontal concepts that were the focus of the course as well as essential questions to help focus them. The last concept of this wiki provided the students the opportunity to take the knowledge being discussed in class and on the wiki, and apply it on real case scenarios.

Clinical faculty members were given the "Clinical Expectations" handout that was developed by clinical faculty in 2006, which describes the expectations of students' periodontal knowledge at each stage of their educational process. I provided the "Clinical Expectations" sheet to assist with consistent evaluation and expectations of students in clinic.

At the conclusion of the course, the students were asked to complete a seven question survey that was created and implemented through *Survey Monkey* to elicit their thoughts and opinions on the impact the wiki had in the transition of their basic knowledge of periodontal concepts into a deeper understanding of periodontology. Faculty members were also asked to answer a six-question survey created and implemented through *Survey Monkey* to elicit their perceptions of the students' ability to demonstrate a deeper understanding of periodontology during patient care.

Observations

The students were introduced to the concept of the wiki in September 2008 and it was implemented in October 2008. At the beginning of the wiki assignment (October), only eight of

the 21 students had joined. Not all 21 students joined until three weeks prior to the end of the semester. The utilization of the wiki remained consist at three to five visits a day until the two weekends prior to end of the assignment. By the conclusion of this project, students developed five concepts, answered four essential questions and seven cases including designing ten questions for each case. My general impression of this project was that it kept over 85 percent of the students engaged and interested in the concepts. The enthusiasm was noticeable during class discussions and in clinic when they were able to incorporate a concept developed on the wiki into the care of patients in the clinic arena.

Clinical faculty members evaluated students' ability to implement periodontal concepts into patient care. They noted the students' enthusiasm on this new project and were encouraged to see this new energy displayed in clinic. Comments such as "Ceri stated that her patient resembled Case #5 on the wiki site and she was able to incorporate the information she developed for the wiki."

Evidence Collected and Results

Utilization of the Wiki site. The first two weeks had the largest amount of content developed on the wiki. The last two weeks of the development incorporated critical thinking components on to the site. The utilization of this site was primarily done by 85 percent (18) of the students in the course.

Depth of Knowledge Displayed on Wiki. The depth of understanding displayed was important in the outcome assessment process. The range was from minimum understanding to moderate-to-advanced knowledge. The way the wiki and the concepts were designed had an impact on the depth of knowledge and deep understanding that was demonstrated. For example, on concept that the students were asked to develop was "microorganisms associated with

periodontal disease". This was presented in a very narrow and closed structure and resulted in

knowledge being presented with no understanding being demonstrated. Another concept "the

influence of endocrine disorders on the periodontium" resulted in knowledge and a deep

understanding. This reinforces the importance of the design of the learning environment and its

impact on students' ability to demonstrate a deep understanding on the concepts being discussed.

The following Wordle "word clouds" display the repetition and variety of words used to

develop one case scenario.

THE INFLUENCE OF ENDOCRINE DISORDERS ON THE PERIODONTIUM

Student Post-Wiki Experience Survey. At the conclusion of DEH-33 Periodontology, the

students were given a seven question survey. The responses (57 percent response rate) to the

questions indicated that the student felt that the wiki project enabled them to develop more

knowledge and a deeper understanding of the periodontal concepts addressed on the wiki. The

following represent the results of the student survey on two questions.

Question #1: Did you feel the wiki allowed you to demonstrate your knowledge on periodontal concepts?
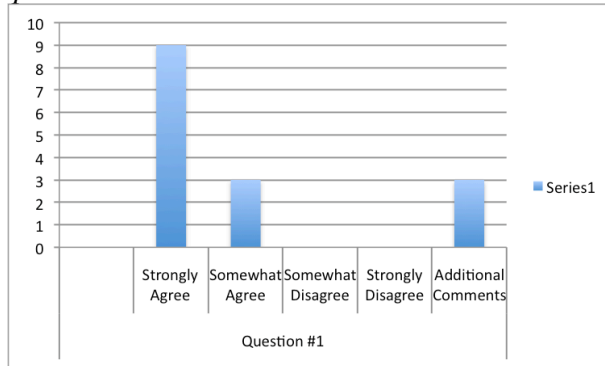
Question #3: Do you feel your work on the wiki allowed you to strengthen your understanding of periodontal concepts and demonstrate this knowledge in clinic?
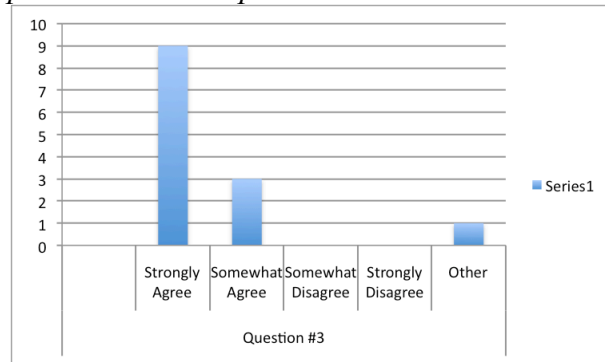
A representation of the students' comments on the survey strongly indicates their perception that the wiki was beneficial in their attainment of knowledge and in their ability to transfer the knowledge into a deep understanding. Here are a few examples of student comments:

- Helped me research information I was interested in writing about in a non-stressful way.
- The wiki came in handy when I was learning about prognosis. I've implemented this information many times during second check-ins (patient care).
- I had a better understanding about pt health status and how the oral cavity might look like in a oral photograph. I understood by the way my classmates explained it more than in the book.

Clinical Faculty Post-Wiki Experience Survey. A six-question clinical faculty survey was administered at the end of the semester. Twelve surveys were distributed via rcc.edu e-mail

accounts and 67 percent (8) were returned. The results indicate that the faculty believes that the dental hygiene students in this action research project have been able to "somewhat" demonstrate a deeper understanding of periodontal concepts when compared to the two previous classes.

The following written comment by a faculty indicates a consistent observation during patient care

> Example #1,
> I see certain students easily grasp the concepts on a high level. Others struggle with those concepts. The good students are better but the lower and middle students are average.

The above comment echoes the thoughts of the faculty members. The stronger students were starting to demonstrate a deeper understanding. The overall results of the survey demonstrated there is a discrepancy in what is expected by the faculty and the knowledge that students should be able to demonstrate during patient care. Expecting students to provide "competent" responses at this time in their educational process is unrealistic and did not support the research stating that students' deep understanding will be inconsistent and "uneven" until they're able to have more real world experiences. (Bruner, 1986).

The results from cycle one lead me to believe that the faculty were not consistent with their assessments of students and the definition of a deeper understanding. This became evident to me at the post semester faculty meeting where the expectations of students, how students were assessed and how faculty defined a deep understanding of periodontology. Prior to the implementation of cycle two, I held three clinical faculty calibration sessions to discuss the expectation of the level of knowledge students should be able to demonstrate in clinic and to come to an agreement on these expectations. All clinical faculty members participated and it appeared that all appreciated the opportunity to openly discuss concerns and student expectations. At the conclusion of the last calibration session, it was agreed that clinical faculty

members would participate in weekly discussions on Google Groups to continue an open

discussion on the expectations of students' level of understanding.

<div align="center">Cycle Two – Aligning Myself</div>

Introduction to Cycle Two

The goal and direction of my action research project has been consistent since its

inception but what has changed is an understanding of the forces that affect the success of

students. Further research to determine what other collaborative tools had been used with success

in professional programs. I found that the discussion boards have been used successfully with

both faculty and peer facilitators. Many dental schools have incorporated peer led learning

groups due to the lack of faculty and have had some success with this process (Kleffner &

Dadian, 1997). I have used peer educators (students researching the discussion topic of the day

and leading the discussion) in the past but the outcome was unpredictable. Now that I have a

clearer understanding of the impact of the course design on students learning and after having a

lengthy conversation with a dental student who expressed the sense of empowerment he felt with

this exercise, I have chosen to revisit the peer led learning activities.

Cycle two continued the use of a wiki as a site for students to build a resource for

periodontal concepts. To complement the wiki development, weekly discussion board or in class

discussion were designed around essential questions.   The last two components involved the

continual use of Understanding by Design model for DEH-43 Advanced Periodontology and the

assessment of students' demonstration of an understanding of Periodontology concepts during

patient care.

The specific question for cycle two is "can the use of wiki as an 'information gathering

tool' in conjunction with peer and faculty led discussion in the classroom and on the discussion

board facilitate a deeper understanding of periodontal concepts?"

Action Outcomes And Results

   Utilization of the Wiki Site. The use of the wiki started from the first day that URL

(http://deh43.wikispaces.com/) was distributed and has had a constant flow of students on it

daily. In cycle two, students were hundred percent involved from the first day of the course.

This may be due to the students' familiarity with using a wiki and the use of this site to prepare

for the Dental Hygiene National Board Exam that took place on March 24, 2009. The students

deepening understanding of concepts are evident on the wiki. An example is when a paragraph

was written on the wiki with inaccurate information from a non-peer reviewed source and two

students question the information. After this, four students found research that contradicted the

original information and ultimately the original paragraph was rewritten to reflect current and

accurate information. They then went on to explain why the original information was incorrect

and the consequences in patient care for using this information.

   My general impression is that having the wiki being built as a reference site is an

effective tool and has kept the students engaged in its use. I heard students in clinic referring

their classmates to the wiki for an answer to a clinical question, which enhances its relevance to

the students. Is it facilitating a deeper understanding? I believe it is by the understanding that is

occurring to determine what information will be place on the wiki and the fact that its being used

occasionally at chairside during patient care to assist the students in their treatment plans and

treatment of patients. Complete assessment of the impact of the wiki on the students' learning

and deep understanding of periodontal concepts will occur after the students have graduated.

This would involve an extended relationship and comparison to other groups.

   *The Utilization of the Discussion Board***.** The incorporation of the discussion board to

answer essential questions was based on constructivist theory of learning.   The outcomes of the

discussion board were impressive. Students pushed themselves to completely understand

assigned topics. The following are discussion board postings where students addressed the

essential question of the week and then incorporated their clinical experiences to further their

thoughts, concluding with a high level of critical thinking through the asking of pertinent follow-

up questions

> Example #1,
> My research indicates the use of antibiotics for the treatment of periodontal disease
> highly recommended as an adjunctive therapy to SRP. Antibiotics alone are not effective
> in the treatment of periodontal disease. The question is, what is more beneficial for the
> patient? Systemic antibiotic therapy or local delivery antibiotic therapy? Personally, I
> think it would depend on the patient. Are they on any other medications? This would
> definitely have an impact on which route to take. Medications can contraindicate other
> medications and have adverse reactions.

> Example #2,
> In my research I found one study that showed there was no significant difference. In
> either routes of administration with tetracycline, another words, they were both effective.
> Another study showed that amoxicillin was more efficacious than CHX as an adjunctive
> therapy. I believe this issue will be patient specific and medication specific. What
> microorganisms are we targeting, specifically, and does the medication target that species
> specifically? Would we need to do a microbial analysis on patients to be optimal in our
> treatment with antibiotic therapy?

Student Survey on Use of Wiki, Peer Moderators and Discussion Board. Six weeks into

DEH-43 Advanced Periodontology the students were sent an eight-question survey developed on

Survey Monkey and there was a ninety percent return rate on the survey. The survey supported

the use of the wiki and discussion board has provided an avenue to transfer knowledge to a

deeper understanding of periodontal concepts. Here are survey results to support this conclusion.

Question #1:Has the use of the discussion board to discuss periodontal topics in DEH-43 allowed you to expand your knowledge of the specific periodontal topics?
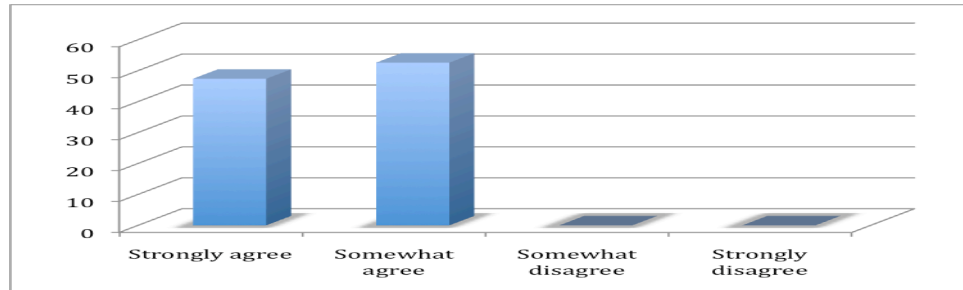
Question #2: Has the use of the discussion board to discuss periodontal topics in DEH-43 allowed you to deepen your understanding of the specific periodontal topics?
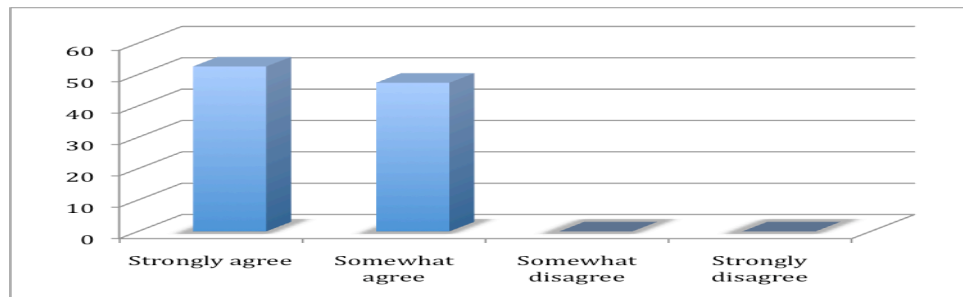
My observation of having a peer moderator for each weekly discussion seemed to allow students

to be more open with the knowledge they didn't have. This allowed for the students to work

towards providing clinical examples or references for the student to use to learn the knowledge

that was lacking. The students were questioned about the perceived benefits of using a peer

moderator for the discussion and 90 percent felt that they would strongly agree or somewhat

agree that a peer led discussion enhanced their acquisition of knowledge. One student justified

her response by stating, "Working together helps brainstorming come together more. I may think

of something and point something out that someone else did not think of and vise versa and I

learn a lot from this." Two other comments are cited regarding the need for faculty facilitation

included "Peers do amazing, but does need instructor guidance in some cases" and "I learn better

when instructors are on the discussion board facilitating the discussion asking The Perfect

questions."

Clinical Faculty Wiki and Discussion Board Deep Understanding Survey. Clinical faculty members continued to evaluate students' ability to implement periodontal concepts into patient care. The clinical faculty started the semester with a renewed sense of understanding and anticipation in what the students would be able to demonstrate in clinic. The faculty continued to comment on the students' enthusiasm and the student initiated conversations about periodontal concepts being discussion on the discussion board.

Did the faculty feel that the students were able to display a deeper understanding of Periodontology this semester when compared to last semester? The clinical faculty members were sent a six-question survey through survey monkey to attempt to answer this question. Nine surveys were sent and there was a 78 percent (7) return rate. The following is an example of one of the questions asked on the faculty survey.

Question #2: The Class of 2009 have been able to demonstrate a deep understanding when determining the need for and the utilization of local delivery of antimicrobials including antibiotics during treatment planning and patient care?
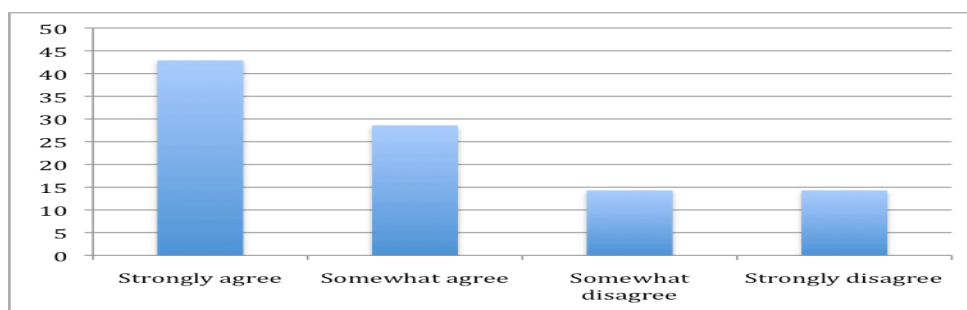
The results of the survey didn't correlate with the faculty discussions on the Google Group site and triggered a faculty meeting to discuss the discrepancy. This meeting brought to light that only two of the seven clinical faculty had incorporated the agreed upon expectations from the three calibration sessions that were held prior to the beginning of cycle two. Therefore the

discrepancy on clinical expectations remains a pivotal issue with this action research project.

<p style="text-align:center">Cycle Three – Aligning the Faculty</p>

Faculty

Cycle two demonstrated an urgent need to focus on the faculty impact on this action research project. It was made clear that faculty members are not consistent with their expectations of students' abilities to demonstrate a deeper understanding of periodontology concepts. Therefore, the focus is now shifting to getting the faculty members to become more closely calibrated on the concepts and definition of "a deeper understanding" and expectations of students. The goal is to obtain a more reliable evaluation of the students' ability to demonstrate a deeper understanding of periodontology during patient care.

Research question

If I can provide the opportunity for faculty members to discuss components of the periodontal assessment tool, expectations of students, and then design an evaluation mechanism, will it increase the consistency in which students are evaluated and therefore allow for a reliable assessment of students' ability to demonstrate a deep understanding of periodontology concepts?

Process

My plan for cycle three included holding biweekly, thirty-minute meetings discuss periodontal assessments expectations and the process for student during patient care. These meetings were designed to allow each faculty member to voice her opinions, concerns and to have input in the design of the evaluation tool to be implemented in the fall semester. The meeting topics were repeated from Monday to Wednesday due to different faculty members being present at the meetings.

The first week's meeting was an open session designed to get faculty members to think about the process of a periodontal assessment and their expectations from students during patient care. The second week's meetings had the faculty members writing down the key components in a periodontal assessment and providing a brief statement as to why each step is important to them.

This is where my action research project must stop due to time restraints of the semester. It will continue and will include the following: 1) presentation of the data gathered on the key components in a periodontal assessments and discussion about findings; 2) assessment of two scripted videos that have students presenting periodontal assessments at chairside with discussion about observations and what elements are important; 3) review of current literature on the current trends in Periodontology by all faculty members and discussion about the readings; 4) the development of a list of key components for the periodontal assessment that all faculty members can agree or consent to incorporate into students' expectations during patient care; 5) development of an evaluation mechanism that includes the agreed upon key components and outlines the expectations for demonstrating a deeper understanding of Periodontology; 6) pilot testing the new evaluation mechanism; 7) utilizing feedback from pilot test and reworking evaluation mechanism as needed; 8) revisiting the three videos and have faculty members evaluate students with the new evaluation mechanism and discussion on the differences and similarities of views and outcomes of this exercise when compared to the first viewing; and 9) implementation of the newly developed and faculty driven periodontal evaluation mechanism.

Action outcomes

The action that I sought to initiate was an open, productive avenue of communication between all faculty members about periodontal assessments and the description of students demonstrating a deeper understanding of periodontology concepts. I strived not to be the "director" during the meetings but a peer that was passionate about opening dialogue that would lead to the incorporation of everyone's opinions and concerns. The ultimate result I'm striving for is an evaluation mechanism that is reliable and it will enhance the learning environment for students through consistent feedback.

The first meeting was held in my office and the environment didn't lend itself to be productive as we had multiple interruptions by students, faculty and a staff. It was decided that the future meeting would not take place in my office but in a classroom with the door locked. The second meeting of the first week took place in the Phoenix Airport. This environment led to a very productive and engaging conversation. There were six faculty members plus myself. Two of these members were present during Monday's meeting. They noted that the conversation and flow was more relaxed at the airport since this environment lacked the interruptions experienced in my office.

The third and fourth meetings were held during week two and consisted of the faculty members writing down the key components of a periodontal assessment and a statement as to why each component is important to them. Nine faculty members, including myself, participated in this activity.

Evidence Collected

    Introductory Discussion. The purpose of this introductory discussion was to initiate an open dialogue between all faculty members. I decided to record the observable behaviors of the faculty members with regard to 1) apparent interest in the process; 2) openness to discuss topic; and 3) openness to listen to others comments. My observations were that 88 percent (8) of the faculty were highly engaged in the process.

    Key Components In the Periodontal Assessment Process. The main data that was collected involved the process of breaking down the periodontal assessment process to allow the faculty members to identify what they view as the key components of a periodontal assessment. After each faculty wrote down her key components, the data gathered was reviewed, and coded to determine trends or themes in the responses.

Periodontal Items Identified by Faculty for Evaluation
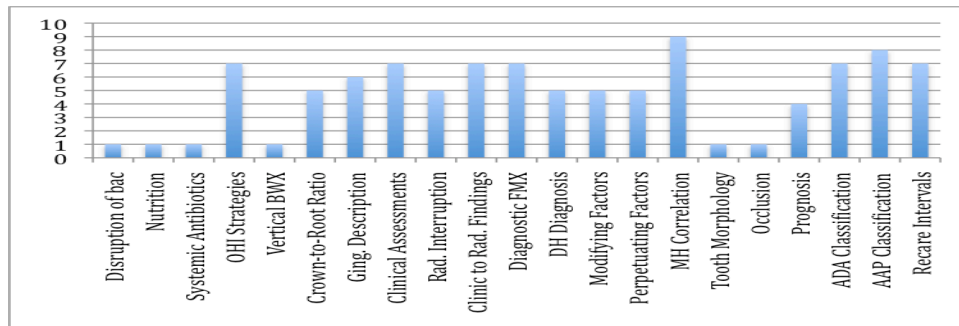
    Based on the information gathered it appears that specific key components are shared by the majority of the faculty members. When I compared these key components with the current evaluation tool, there was a discrepancy on what we are currently evaluating the students on and what is viewed as a "key component". There are many items missing which can lead to inconsistent feedback to students if they utilized the current evaluation tool as a guideline for the

demonstration of a deeper understanding. This confirmed the need to continue the proposed

steps for cycle three.

Final Reflections

What I learned about my work environment

The action plan that I took did not initially take all variables into account and therefore, I

did not evaluate the environment for this action research project effectively from the beginning.

I took many things for granted from the beginning and this is evident in my force field analysis

where I have the faculty as a driving force for the success of this action research project. I didn't

understand that the lack of calibration of faculty expectations could have on this project and the

assessment of students' outcomes.

Once I started reading *Understanding by Design* by Wiggins and McTighe (2005), I

became aware of the impact that the design of each course has on students. At that moment it

became clear to me that the design of the courses were interfering with the students' ability to

take knowledge and transfer it into a deep understanding.

The wiki was an effective first step in this process of "redesigning" the dental hygiene

curriculum. It provided the energy and motivation to get students and faculty interested in

thinking through the needs that we have and actively looking at solutions. The most obvious

change I encountered over the process of cycle one is my understanding of the real impact the

design and environment have on students' learning. Constructivism has always been the focal

learning theory for me but now I see that other faculty members do not embrace it at the same

level that I do.

Cycle two lasted for only four weeks and I found it was easy to get caught up in students'

enthusiasm for the use of the wiki. I continued to remind myself of what Dewey (cited in Russell, 1999) stated about the importance of finding an experience that will match the desired outcomes. "Hence the central problem of an education based upon experience is to select the kind of present experiences that live fruitfully and creatively in subsequent experiences" (Dewey as cited in Russell, 1999). I do believe the wiki is enhancing the transmission of knowledge to a deeper understanding but I don't feel it can accomplish this independently.

In cycle three, my focus changed from students to faculty members. This was not an anticipated detour in my action research project but it was welcomed. I believe that cycle three has allowed me to look at the design of a course and therefore appreciate all the forces that have impacted student learning.

I feel that most of the faculty members are embracing this opportunity to reflect and design an evaluation tool that will allow us to evaluate students with consistency and therefore, reinforce knowledge and understanding that students are presenting during patient care. Keeping the faculty engaged may be a challenge but I think that all the faculty members want to design a learning environment that will enhance student learning. I believe if I can keep the focus on the students and what this process has to offer the students, the faculty will remain engaged and enthusiastic. I'm starting to think about how to sustain the inevitable change that will be the outcome of cycle three. Returning to old, comfortable behaviors is a risk that occurs anytime change occurs. I need to find motivational and supporting mechanisms to put into place to support the change in procedure and/or behavior.

What I've Learned About Myself

As I reflect on the change in me during this process, I've come to realize that I work with faculty members that will do anything to improve the learning environment, including giving up their lunch hours for 14 weeks as we work through this process. And, the majority are excited and enthusiastic about the potential impact this process may have on student learning. I realize that this is rarity and I must not take it for granted. I also realize I must be an effective, efficient and empathetic leader during this process in order to keep them fully engaged.

As the administrator of the program, it is not infrequent that when I make a comment that others automatically agree. As aware as I am of this, if I feel rushed, I will accept the consensus without question. This habit is undermining my ability to be an effective leader by not allowing me to hear other thoughts and perspectives. I have realized that my perceived time restraints tend to result in my wanting to expedite discussions and come to a timely conclusion. I need to force myself to ask more questions of others, to allow others to process information and ultimately to provide an environment that results in collaboration. I've also learned that I'm presented with many mentoring opportunities that I systematically ignore. My goal is to be more aware and to capitalize on mentor opportunities as I move forward with cycle three.

If I continue to look from this prospective, I question why I can listen to students for hours and when faculty members start asking questions I find myself looking at my watch. I haven't been able to connect on why I feel compelled to return to paperwork when faculty members are talking to me but I'm now aware of the impression this must have on faculty members. This is a perfect example of my poor listening skills. I have been trying to improve on this weakness over the last few weeks and I've noticed an increase enthusiasm among the

faculty members. An effective leader needs to be an effective listener and it is imperative that I make this a priority in my life.

I also realized that I expected the faculty to embrace this project and if they didn't I would have been extremely disappointed. I wonder why this is since I'm usually comfortable with individuals not agreeing or supporting all decisions that are made in our educational setting. I think again it may be because I think the impact of this action research project may be the start of becoming competent in teaching all students to be able to take knowledge and transfer it to a deeper understanding.

My final reflection is that I have been able to identify and address the perfect storm that I have been involved in; the perfectly aligned collision course of students, faculty and myself due to lack of understanding of the environment that I was teaching in. I believe that the winds in the perfect storm have been reduced with the design of the curriculum in the periodontology courses incorporating *Understanding by Design*, the thunderstorms have dissipated with my awareness of all components involved, and there are intermittent clouds as the faculty continue to work toward a shared understanding and expectations of a deeper understanding of periodontology during patient care. I believe that the dental hygiene program and its students have survived the storm, and the students have a deeper understanding of periodontology having been through this action research project.

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