Online Student Satisfaction and Preparedness: Case of Dental Hygiene
Baccalaureate Programs

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Introduction

This research project will evaluate student and faculty preparedness, learner support and course development in DE, with a focus on a dental hygiene (DH) baccalaureate online program. Learner support is a key ingredient to effective learning in any distance education (DE) setting. Wang (2005) reports that support must be given to both groups to maintain a low attrition rate in a DE course.

Fundamental concepts of DE, such as transactional distance, a self-directed learner, empathy, technology and instructional design, were closely reviewed in the literature. This review supports the notion that all DE educators, including dental educators, must understand and be able to implement these concepts, to have an effective course/program. These concepts will be discussed in depth, and related to the need for dental educators to fully grasp these concepts in order to effectively engage their students.

There are seven lessons of effective online distance learning which are important in DE (Blaschke 2004). It will be demonstrated how these seven lessons about course development are essential for dental educators to understand for the development of a successful DE course. The development of DH DE programs will promote the expansion of the DH profession by enabling students in more remote areas to have access to educational programs which may not have been available to them previously.

A pilot study will be developed, with questions relating to and assessing students’ perceptions of their educational experiences in a DE setting. There is currently a dearth of DE courses/programs in the field of dental hygiene. Dental educators will need specialized training to develop retentive and productive programs. Doing so will enable them to achieve a major
goal of their professional organization, the American Dental Hygienists’ Association (ADHA), by increasing Access to Care and contribute to the growth of DH DE.

Another purpose of this paper is for dental hygiene program directors/educators to see the importance of DE. At this time in Maryland, there are seven DH programs and only one BS program. ADHA has been pushing for years for the entry level of DH to be a BS; however, more and more AA programs are gaining accreditation. With developing more DH DE program, more AA degree clinical dental hygienists may choose to leave the clinical setting of DH and desire to be a DH educator and an online program will be most appropriate for them.

Background

According to Barnes (2007) the dental hygiene profession has a shortage of faculty. Barnes reports that some programs are encouraging an increase in the number of DH educators by developing an online program where a person with an Associate’s Degree DH can attend online classes in the field of DH to attain a Baccalaureate degree and possible Master’s degree in DH while working in the field in a clinical setting. Grimes (2002) states that the nursing profession has 38% of its programs online. In 2000, the American Dental Hygienists’ Association (ADHA) conducted a survey, with 172/255 surveys being returned, looking at the number of DE programs available within the DH programs. The study defined DE as 90% of their program must be offered online. Grimes (p. 1142, 2002) enumerates many disadvantages in DE as reported by DH program directors;

- Limited computer access, equipment and skill of the students
- Decreased student contact and discussion
- Technological issues
- Labor intensive demands on faculty
Cost

Learning curve for faculty and students with the use of technology

Testing difficulties

Assertive students overpower other students

Attention span of the student

Limited value for preclinical and clinical coursework

Some of these disadvantages could be eliminated if DH DE educators had a better understanding of the process for developing, implementing, and maintaining DE courses and programs. Encouraging the process could ultimately result in the development of more DH educators.

Methodologies

Having established the basis of this research paper, there will be a review of the supporting literature.

The literature review was conducted via University of Maryland’s OneSearch system and the professional dental and dental hygiene association resources. Learner support for students and faculty are needed for DE and for the expansion of DH DE programs. DE educators need to have an understanding/knowledge of the following concepts: transactional distance learning, empathy, self-directed learners, fluency with technology, instructional design and learner support for student and educator; however, DH DE educations need a clearer understanding of the concepts. There has been considerable research related to all five concepts and how they apply to DE. In contrast, little research has been conducted associating these concepts with DH DE programs.
There is a need for additional research related to DH DE graduates and educators. A survey has been developed and will be processed through Survey Monkey at a future date. The survey will address all five concepts listed above along with other information relating to demographics, information technology, support from faculty and students, and curriculum. The survey will be modeled after the Lykert Scale, which is a summative rating scale (Gliem & Gliem, 2003). The scale will have multiple items; each question will measure something that can vary quantitatively rather than qualitatively; “each item has no “right” answer; each item in a scale is a statement; and respondents are asked to give rating about each statement” (Gliem & Gliem, 2003). In the future, once the study results have been tabulated and studied, the statistics will be reviewed based on the literature searches done and an analysis will be made. The ultimate goal is for dental educators to learn and improve on their learner support for the student and to provide robust and engaging DH DE courses.

There are limitations to this paper. There is not a large population of DH DE students or programs. Developing more DE programs in the field of DH would be very advantageous. Given the literature review reports on a survey done ten years ago and with the advancement in technology, generating another survey with hopes of higher participation, will enable dental educators to closely examine areas that need improvement to encourage more DH programs to offer more DE courses with hopes of more students entering those programs. There is a large amount of DH programs that offer an Associates’ degree. Some of these graduates will want to work in the clinical field and at the same time further their education by earning a BS degree. These students will need mainly didactic courses to attain the higher degree. These courses could be offered as DE. Considering what the research states that there is a need for more DH educators, by offering more DE DH degree completion programs will produce higher educated
DH that may choose an educational career path. The survey will need to be conducted at more than one DH DE program and programs that do not have a DE component.

**Literature Review**

The literature review will be organized in the following manner. Pedagogy and theories related to DE will be described and evaluated in words that the DH educators will understand. Once all the concepts are described, articles relating to DH DE will be evaluated against the defined concepts in order for the DH educators to attain a better understand of what support services are need to maintain a faculty and student engagement for a successful DE program.

**Fundamental concepts related to DE**

**Transactional distance.**

Transactional distance is an exchange between students and faculty in an environment where they are geographically separated from each other. Moore (2005) describes transactional distance as having three variables; dialogue, structure, and learner autonomy.

Dialogue is described as interactions having positive qualities that are valued by each of the participants (Moore, 2005). It is essential that the participants in the dialogue are respectful, active listeners who contribute to the conversation. Moore (2005) emphasis the dialogue in an educational setting should be guided toward the student gaining understanding of a topic. The medium for communication is not limited to written/bound text, but includes digital technology offered by the World Wide Web (www). Synchronous communication, audio-video conferencing or asynchronous communication, and electronic mail should be chosen by the faculty and be appropriate for the course and students (Moore, 2005). Dialogue is an interaction within an online classroom that is essential to its success.
The second element of transactional distance is dialogue as highlighted by Moore (2005), is course design that is known as the structure of a course. Structure is determined by the educational philosophy of the faculty leading the course. Moore (2005) reports that structure can be tightly directed by the faculty or the student can work at a self-directed pace and this will vary program to program and course to course. When learners are in a course with transactional distance, they are receiving instructions via ongoing dialogue with faculty and learning materials in a well-structured course design. In this environment, students can adapt in order to work at their own pace and meet their own personal needs (Moore, 2005).

Leaner autonomy is described by (Moore, 2005, p. 215) as the students’ making the decisions regarding their own learning plan, locating resources and eliciting respect from the faculty in a smooth running course. Course structure will govern how much learner autonomy students will have. Interaction is present in the virtual classroom allowing learners some autonomy as well as developing a relationship with the faculty and other learners.

The literature is very forthcoming about the three elements confirming transactional distance associated with distance learning. Dialogue, course structure and learner autonomy need to remain balanced to produce a quality course which fully engages the learner.

Fallon (2011) addresses the importance of dialogue by stating synchronous communication in postgraduate courses breaks down barriers, leading to successful courses. It is noted that the use of synchronous tools increase student motivation and engagement and help formulate the sense of community (Fallon, 2011). Frequency of dialogue is not what is important, but the quality of that posted dialogue is what is essential. Fallon supports the need for quality dialogue to be ongoing, thus lowering the sensation of transactional distance in a course. In Fallon’s study, the results provided positive feedback for synchronous meetings, with the
students reporting the online classroom was more efficient in getting information across to the learner. Some students reported that synchronous meetings were not favorable when the faculty were “reading from their script” (Fallon, 2011, p. 15) leaving no room for student engagement.

Fallon (2011) reported findings that relate negatively to the structure portion of transactional distance. Study results show that the learners’ impressions of virtual classroom meetings are impinging on their learner autonomy and the use of advanced technology was not attainable by all students. This was due to the students varying competency level with using the www and their possessing the means to access and understand digital technology. Overall, virtual meetings seem to increase dialogue when considering transactional distance.

Fallon (2011) describes learner autonomy as the sense of independence and interdependence which the learner needs to engage in the course. Fallon suggests that there may need to be more research on revising Moore’s theory and increasing the amount of synchronous technology within an online classroom (Fallon, 2005). Courses that are inflexible with their classroom learning structure may lead to a decreased level of dialogue thus increasing the level the student frustration and the student may be perceived as a more autonomous learner.

As suggested in both articles, course dialogue and course structure are intertwined to build the degree of learner autonomy needed to engage and be successful in a course. Both articles also support the necessity of balance in all aspects of transactional distance. A change in the lack of balance in any one of the concepts that build transactional theory will affect the other components positively or negatively.

**Self-directed learner.**

A self-directed leaner is a student who takes responsibility for his/her own learning. Lai (2011) states that being a self-directed learner is a personal trait. Two Likert-type evaluation
systems concluded that adult learners are psychologically ready to accept an online setting for education (Lai, 2011). Lai (2011) concludes that adults understand that continued learning may be a requirement of their particular job and will need to adapt to online training, the most readily discernable training. Adult learners tend to be more successful and better able to reach their personal and professional goals. Adult self-directed learners are able to access the virtual classroom more easily than the traditional face-to-face classroom. The study results reported by Lai (2011) state that adult learners are capable of making appropriate arrangements for online learning, choosing proper materials and proper learning activities, therefore generating better learning outcomes.

Lai discusses how adult learners embrace online learning as a means to improve their value in the world of business. Other personal traits are necessary to be a successful online learner in the world of DE. Chu, Chu, Weng, Tsai and Lin (2012) discuss how online learning must have relevance to the learners’ daily lives or personal goals.

Chu, Chu, Weng, Tsai and Lin (2012) state that self-directed learners must have interests in technology, and dialectical and emancipatory learning. Technology learning interests involve a learner who views the form of technology as easy to use, relevant to life, interpretation and challenge (Chu, Chu, Weng, Tsai & Lin 2012). Dialectical learning interests are when a student navigates through an Internet based course, desire for learning and the desire for the Internet to provide an intellectual literacy (Chu et al., 2012). Emancipatory learning is associated with the learner having the ability to think reflectively, use critical judgment skills and be able to be stimulated in an online environment (Chu et al., 2012). All three of these interests are needed to be a successful self-directed learner in an online educational arena.

**Empathy.**
According to the Webster dictionary, empathy is defined as “has the ability to understand and share another person’s experiences and emotions; the ability to share someone else’s feelings” [http://www.merriam-webster.com/dictionary/empathy](http://www.merriam-webster.com/dictionary/empathy). DE educators must possess this attribute in order to engage and relate to their students. Students must have this same attribute to be successful DE students. Empathy plays a role in creating a positive learning environment with an end result of engaging the student (Loureiro-Koeschlin & Allan, 2010).

Loureiro-Koeschlin and Allan (2010) support mentoring in the private sector and in the educational environment. They report that the educator’s role as a mentor is important and the educator acts as a role model for students. In online learning, the student can feel alone in front of their computer, in an online community, or in a one-on-one relationship with a mentor or student. Mentees need time to build trust with their mentors. Both the mentee and mentor need to understand the importance of meetings/postings/time and space (Loureiro-Koeschlin & Allan, 2010). Tutors/educators that make their ‘presence’ visible in the online environment to help their students adapt, in a comfortable way, to their online learning classroom as compared to the traditional classroom environment (p.273, Loureiro-Koeschlin & Allan, 2010).

While Loureiro-Koeschlin & Allan, (2010) discuss the importance of trust building in the online environment, Murphy, Shelley, White, and Baumann, (2011) look at empathy as way of lowering the anxiety level in the student. When empathy is considered in both aspects, a positive online learning environment will be produced.

Empathy is significant to one-to-one interpersonal support (Murphy, Shelley, White, & Baumann, 2011). The following skills are necessary to relieve anxiety in the student; friendly atmosphere, appropriate support, understanding the learners’ needs/strengths, adapting to students’ language levels, and making the students feel they matter (Murphy et al., 2011).
Students and educators both agree that promptness with feedback and individual assignments is important (Murphy et al., 2011). Murphy et al.’s (2011) survey results report that successful educators stress the importance of empathy within the student learning environment. Empathy plays a significant role in the student engagement and success in the online classroom.

**Technology.**

With the constant advancement in the world of technology, universities and colleges and their faculty and students are faced with the challenge of keeping pace with the advancement for effective teaching and learning online learning. The current technologies used in education at this time are, Internet and WWW, mobile technology, and video transmission (Sangeeta Namdev, 2012). Web 2.0 is popular in the educational environment due to its virtual applications which offer interaction, collaboration, and sharing among users (Sangeeta Namdev, 2012). The impact of using Web 2.0, according to Sangeeta Namdev, (2012, p. 264), “is exchange of knowledge and material, to facilitate community building, to provide teachers and learners a social environment and platform to develop collaborative research environment and results.” Educators will need separate training programs in technology literacy programs. Teachers’ needs are going to have to be flexible in implementing innovative ideas and technology based teaching methods. Educational institutions will need to give support to their educators through training workshops on new technologies in order to produce a classroom that is encouraging and engaging its learners.

Ongoing fluency of technology is needed by educators of online learning. Amirault (2012) supports the need for ongoing technology fluency in higher education. Faculty members will need to constantly revise their courses to obtain the maximum pedagogy through personal training. Witte (2007) supports online learning via the use of blogs. Blog technology is
a form of communication between the student-to-student and student-to-tutor. This form of
dialogue, when used with the primary school aged student, prepares them for continued growth
of digital and technology fluency. Continued digital learning on behalf of the educator with
integration with the younger generation’s education, will make for a better technological
advanced DH undergraduate student.

**Instructional design.**

Instructional design (ID) is the systematic approach to the development and delivery of learning
materials used for a virtual classroom. Within the online classroom, ID needs to meet and be
adapted for the faculty and the learner. Instructional design, when developed correctly, will
facilitate the transfer of knowledge from faculty to student.

Instructional designers are faced with the challenge of providing a positive learning
experience in a DE classroom. Interactive multimedia (IMM) is used in classes to support
undergraduates as a supplement to the print course material (Kulasekara, Jayatilleke, &
Coomaraswamy, 2011). Printed course materials lack the interactivity which is essential for
distance learners. By designing IMM learning material, there is a greater potential to understand
and present abstract concepts in the sciences (Kulasekara et al., 2011). Kulasekara et al. (2011)
evaluate a science based course through a questionnaire, interview process, and observational
study. Quantitated data was collected through the questionnaire and qualitative data via the
interview process and observational study. The results demonstrated that the use of IMM in the
course was very much appreciated by the students and helped them to grasp concepts more
readily. The proper use of IMM in ID will result in increased learner comprehension with
complex educational concepts.
While knowledge transfer is essential to student growth, ID of all courses must be closely examined. Using specific forms of digital media will enhance a course and produce more engaged and deeper learners.

Beckem II and Watkins (2012) discuss the fact that digital media is at the cutting edge and creates a growing simulated environment in DE. By using IMM in online course development, the needs of students, faculty and administrators will be met (Beckem II & Watkins, 2012). Learning objectives are met by making interactive course content with the intention of building learner confidence (Beckem II & Watkins, 2012). With faculty following the building blocks described by Beckem II and Watkins (2012) for online class design, a path of knowledge transfer will be formed through story context from faculty to student. The building blocks are opening interactions, supporting interactions, primary interactions, signposts, remediations, and summative assessments. All simulations can be integrated into the University’s learning management system (LMS). When courses are being developed, ID must be considered as a combination of technologies that will increase student engagement and promote a deeper learner.

**Student and faculty preparedness.**

Student satisfaction depends more on the quality and effectiveness of the instructor and the instruction than on the technology (Appana, 2008). Appana (2008) also states that the student must be a self-directed learner. There are concerns with the use of complex network systems for both faculty and students that will lead to communication issues on the part of both entities. Appana speaks to the importance of faculty maintaining a professional demeanor and understanding the importance of teamwork. Faculty must understand that by embracing the online educational opportunities that editing course material is instantaneous, thereby providing
students with the newest and most current information. Appana (2008) addresses a study, which concludes that students who are in their adolescence and who are ready to learn will embrace cyber-learning and be successful. Students and faculty embracing technology is key to being prepared and succeeding in online educational courses.

While Appana speaks to the importance of adolescents learning to be responsible online learners, Deka and McMurry (2006) discuss comprehension, study skills and flexibility. All are topics that DH DE program directors need to understand and embrace to allow for the growth of DH educators in the online sector.

Deka and McMurry (2006) conducted a study on preparedness of students participating in online classes. Preparedness is viewed as a student’s competence with study skills and reading comprehension, where reading comprehension, in particular, was highly correlated to student success rate. Time management and autonomy are issues centering on success for the younger DE student. Younger students may face issues with disposition such as learning style and lack of confidence that will prevent their success with the distance format. DE students need to understand the importance of not falling behind in assignments and need to prevent any form of procrastination. Faculty need to understand the need for flexibility when it comes to completion of a course requirement in order to produce a successful DE student. The Deka and McMurry (2006) study concludes that the measurement of student/faculty preparedness needs to come from building a rapport between the faculty and the student to provide feedback and realization of the importance of the student being an active, engaged learner.

**Blaschke’s seven lessons related to DH DE**

Blaschke investigates research and best practices associated with collaboration of e-learning and online learning. Collaboration in turning f-2-f classes to online classes will involve
many departments within an educational setting. The importance of working in a positive environment will create these courses in imperative. Blaschke recommends seven lessons for nourishing collaborative efforts in the online classroom and states how support services are needed. The seven lessons are: promote a learning culture where knowledge generation and sharing is openly desired, cultivate and capitalize on learning champions (positive, motivated people), build trust and relationships in teams (positive correlation between trust and communication and cooperation), make use of organizational and knowledge management tools and methodology to keep communication flowing (preparation, organization and management), use face-to-face and online interactions appropriately (face-to-face important at the start of a project), provide the necessary infrastructure and technology to sustain online collaboration (positive relationship between the IT department and the training department), be flexible to adapt to change. Each of the listed lessons is clearly outlined in the article and are able to be applied to DH DE.

**Promote a learning culture.**

As demonstrated in the literature review, it is essential for the faculty to promote an environment in which the student feels engaged and involved to minimize or eliminate a student’s sense of isolation. Grimes (2002) report that there is decreased student contact and discussion in the online classrooms. DH faculty needs training in techniques to prevent this from happening, and to understand the importance of engaging the learner to become a deeper thinking individual.

**Cultivate and capitalize on learning champions.**

According to Grimes (2002), there was a very low return rate on a survey done via ADHA concerning online courses/curriculums. The DH administrators need to realize and
embrace the advances in synchronous and asynchronous learning platforms. This would open the
door for more AS degree DH students to secure BS and MS degrees. After reading Grimes
(2002), it appears there is no outstanding learning champion DH educator.

**Build trust and relationships in teams.**

Grimes (2002) is very clear that an advantage to online DH courses is monitoring student progress. Open dialogue will result from monitoring students and giving the students the ability to interact in a nonthreatening environment (Grimes, 2002). Smaller class sizes will enable DH educators to cultivate a more intimate and trusting partnership with the students. In this environment, faculty will have a heightened awareness of student-to-student interactions. Faculty need to be aware that some students will overpower others in the online classroom, as reported as an issue in the DH online classroom (Grimes, 2002).

**Make use of organizational and knowledge management tools.**

Grimes (2002) reports organization and efficiency are prized characteristics of the online classroom as reported by DH educators. Effective training of all DH faculty would be essential to maintain this positive aspect in DH DE. It is also reported that faculty having an excellent comprehension and working knowledge of the LMS platform are considered a huge advantage to student learning.

**Use face-to-face and online interactions appropriately.**

Olmsted (2010) clearly states, dental hygiene programs which are not BS or DCP will need to have an f-2-f component. Students who are returning for a more advanced degree in DH will be the learners who will mainly be utilizing DE DH.

**Flexible to adapt to change.**
Olmsted (2010) reports that the online DH learner is mainly a student seeking the advanced DH degree. Such a student, as noted earlier, is typically one with greater responsibilities. Faced with this prospect, the DH DE educator will need to integrate a greater flexibility into the course schedule as to ensure a high retention/completion rate.

As the above five fundamental concepts of DE have been explained and supported by the literature, allowing DH educators the ability to formulate better understanding of what is involved in creating and conducting an online course, there are other aspects which needs to be explained and supported for their review. Blaschke (2004) describes guidelines that work well in the collaboration of converting f-2-f classes into DE classes.

Promote a learning culture.

Setting the tone in the online classroom, from the start, is essential to faculty and students feeling they belong within the learning environment. Loertscher and Koechlin (2013) discuss the development of a virtual learning culture, which would be a replacement for the static and one-way stream of information common to f-2-f classroom. Such a virtual learning culture from librarian/faculty will ultimately produce a more engaged and involved learner. Participatory culture is described by Loertscher and Koechlin (2013) as having the mentor involved in the virtual classroom with planning, teaching and assessing the activity among the faculty and students. This type of culture encourages collaborative teaching and learning in DE, allowing for ideas to flow openly and, making learning more welcoming.

Planning, teaching and assessing within a DE classroom can only be successful with the understanding of specific acquired behaviors. Loertscher and Koechlin (2013) speak specifically to culture as not being a one-way form of communication. Uzuner (2009) address how acquired
behaviors are essential to faculty and students when striving to attain a positive and successful online learning environment.

Uzuner (2009) describes culture as acquired behaviors, perspectives, and values characteristic of a particular group or community. Faculty and students need to have a clear understanding of these traits in order to have success within the online classroom. Uzuner reports on a study conducted with Americans and Non-Americans. Non-Americans prefer working at their own pace to review different options within a specific topic (in their native tongue), and will post only when they have a complete understanding. Students and faculty who embrace an online learning culture, ultimately gain appreciation and respect for the convenience, flexibility, and social benefits of these cultures.

**Cultivate and capitalize on learning champions.**

Learning champions are the leaders in DE who have changed the way educators view the value of DE. However, there are lesser known, sometimes unheralded champions or pioneers who should be recognized for their innovations in education. Nick Kremer is a language arts teacher at a high school and a doctoral student. He published an article delineating his challenges, approaches and successes of instituting an online class for high school students during the summer months. By outlining his objectives and researching his options to make them more accessible, Kremer was able to include any student who wanted to participate in the course. After the summer session, the students reported that the online course worked better than a regular course, and that they would have not participated if the course was an f-2-f course (Kremer, 2010). Kremer is a learning champion by being the first to bring an online course to his school.
Learning champions are not limited to the published, well known top educators in the field of DE, as indicated above with Nick Kremer. However, Dr. John Ebersole, a visionary leader, is a well-respected learning champion in the field of DE.

Dr. John Ebersole is the President of Excelsior College, an educational institution known for its online education. An interview with Dr. Ebersole was conducted by three University of Maryland University College students: in July 2014. In the interview, Dr. Ebersole identified several significant challenges facing Excelsior College and other online institutions. These include challenges from a continuing geographic bias among prospective students, competition from traditional colleges and universities, and the problem of differentiating among institutions. According to Dr. Ebersole, many students, particularly undergraduates, still decide which institution to attend based on geographic bias (proximity to home), rather than on other factors such as quality of instruction, and academic reputation. Being a visionary leader is essential to success in DE and must be supported by faculty, staff and students. Liberman, Sullivan and Mastrodonato (2013) concluded that Dr. Ebersole is a learning champion in DE who has successfully, because he is a design dedicated visionary leader who has embraced diversity and instructional design to promote a respected DE program.

**Build trust and relationships in teams.**

Li (2013) discusses elements that are essential to online communities to ensure success through relationships. Interaction, culture and trust are the terms he discusses and links to open communications. He links trust in with emotional support thereby creating a learning environment in which a member feels connected, and can obtain emotional support and academic support through these connections. With this trusted support, there is open dialogue and interactive activities. Li (2013) emphasizes the need for educational activities to evolve by
including trust, respect, and controlled dialogue by the faculty. One strategy to earn respect in the classroom is to have the learners do introductions at the start of the class, and for the teacher to outline the goals and framework of the course. Li (2013) concludes by stating that the maintenance of a vital online discussion process will develop a culture of support and trust, and attain the goal of deeper online learning.

Li (2009) discussed the need for open dialogue in the classroom pertaining to group success; Brodie (2009) takes another view of how to achieve successful group work. The key components both authors focus on are communication and problem solving with the constant presence and involvement of the faculty.

Brodie (2009) uses the buzz word “interdisciplinary” when discussing the concept of teams. He states that using online team meetings will help with communication and problem solving. A virtual team member is defined as a learner who belongs to a group and shares a common goal and is able to accomplish this goal working interdependently. Brodie believes that given the diversity of the students in an online class, placing them in a group situation will allow each student to share and learn from the other as well as the faculty leading the course. The virtual classroom is built from teams, when considering the vast technologies available, which can deliver resources as well as specific course content. Brodie (2009) discusses how using interdisciplinary teams helps sharing of skills and work tasks to be successful with a project. When group/team projects are formulated inside a virtual classroom, the faculty must be a willing mentor who engages and interacts with each member group of the on an individual basis.

Make use of organizational structure and knowledge management tools.

Organizational structure has a significant impact on overall success, leadership and effectiveness in an online classroom. Online learning environments require more learner self-
control and proactive learning to construct knowledge (Cavanaugh, Lamkin, & Hu, 2012). The use of checklists to keep the learner on track is a useful tool found for student success. Cavanaugh, Lamkin, & Hu, (2012) conducted a study with students using checklists and reported that those who received checklists turned in their work two to five times earlier that those who did not use checklists. The students using checklist reminders served as a structure to break down tasks into more manageable units. Using checklists have a positive impact on effective online classroom learning.

While Cavanaugh, Lamkin, & Hu, (2012) speak on the use of checklists guiding students to completion of course requirements, Blaschke (2004) agrees with providing checklists for students and discusses the need for open communication and grouping students within the same geographical location.

Blaschke (2004), reports that open communication is key to keeping student frustration level at a low rate. She reports that having a schedule will maintain a continued dialogue. Providing the learners with a task sheet of what and when tasks need to be completed will increase success rates and lower student disorientation of the online classroom. IF the faculty member considers any time differential of the students based on their geographical locations, when implementing a course, the students will benefit and be more willing to succeed. Another key to successful organization in a classroom is clearly stating, at the onset, all requirements for the course/projects, learner responsibilities and end result expectations.

**Provide the necessary infrastructure and technology.**

Providing the best form of technology is key to producing an online learning environment with which the student is at ease. Little-Wiles and Naimi (2011) discuss how the learning management system (LMS), Blackboard (Bb), is integrated into blended online classrooms.
Study results were reported that faculty is using Bb mainly for course content and announcements. It was reported that grades, resources and the syllabus are mainly accessed by the learner. Little-Wiles and Naimi (2011) report that students found the chat to be most useful within group projects. Having a LMS that is reliable and easy to navigate is key to student online technology success. However, they also question if a LMS is reasonable and practical and can be used to teach every course in a virtual classroom.

Little-Wiles and Naimi (2011) addresses the use of Bb and its functions for maintaining an up-to-date technological classroom. Blaschke (2004) discusses technology use more from the concept of support needed to the student and faculty.

Blaschke’s (2004) concern for a successful classroom comes from the support received from the IT department to the learner and the faculty. All software and hardware used in an online course needs to run smoothly, and both learner and faculty need to feel comfortable and safe using it. Creating an environment where the learner feels comfortable and clear is key to success, when using a LMS within the virtual classroom. Choosing a LMS that is accessible to all members of the group/class will increase participation. Resolving and overcoming technological issues in an online classroom will lead to a higher course completion rate.

Use face-to-face and online interactions appropriately.

Skylar (2009) discusses the use of both asynchronous and synchronous learning and the importance of integrating both into a course. Asynchronous learning is an approach in which the learners are provided with a flexible learning environment that is self-paced, and learning materials are delivered via different forms of technology (Skylar, 2009). Synchronous learning has the instructor holding a real-time class using a specific form of technology, and the learner is required to attend (Skylar, 2009). Skylar conducted a study that had several interesting results.
Students preferred courses that had synchronous and asynchronous forms of learning incorporated. The students reported that they felt they had an increase in understanding the course materials. The students reported that test performance was increased associated with material that was delivered synchronously. Utilizing both forms of learning properly into a course design is prudent in student success.

While online learning is in an upward growth pattern, choosing when to use synchronous and asynchronous learning is essential to not overwhelming the learner. Skylar (2009), conducted a study which suggested that using both technologies in a class are viewed positively by students, Blaschke (2004) notes that it is most important to hold a synchronous session at the start of a project and periodically for student success.

Blaschke (2004) states that in her professional and educational experiences, starting a project with an f-2-f meeting increases the success rate. This form of informational exchange is also viewed as motivational for the students and will create less confusion on large project reports, Blaschke (2004). For this paper, this author views both forms of information exchange as vital for student success. Holding a synchronous session at the onset of a project helps to eliminate confusion and increases motivation as the project allowing for a better understanding of expectations, and having questions answered on the spot rather than having to wait for a response. Properly combing the two forms of information exchange will produce a student with deeper learning on the topic.

Flexible to adapt to change.

One can only be flexible if one has a sound understanding for empathy. It is essential for the faculty to student relationship be understood as a key component to student satisfaction (Hall, 2008). Hall states that the faculty role is both teaching and personal development; however, he
also states that the student must take responsibility of their own learning and become an autonomous learner. Hall (2008) believes, faculty must employ empathy in four different modes. These are: empathic understanding, empathic behaviors, empathic responding and synchronous empathic experiences. By having faculty focused on these varying empathetic styles, they will be better able to relate to and support the learner more professionally and with great flexibility.

Hall’s concept of a course designed for faculty to gain better understanding of the importance of flexibility and empathy follow suit with Blaschke’s lesson on the need for flexibility to adapt to change. Student success rate is no doubt dependent on the faculty having a clear understanding of this concept.

Blaschke (2004) quotes many articles that speak to the need to adapt to change. Specifically, she addresses the need for willingness to adapt to change within the learning environment. In this author’s experience during her tenure on this degree, 90% of the faculty have been flexible in one sense or another. The 10% who were not flexible, also had little empathy for the student. UMUC has implemented a new LMS. There are students who are now enrolled in courses using both LMS, returning students who need to learn a new system and new students learning a LMS for the first time. All faculty must be flexible with the students to reduce the possibility of student frustration in learning the LMS system and to ensure a high course completion rate.

Student/learner support and faculty support and their relation to DE DH must also be considered if one is desirous of creating successful online courses and programs in DH.

**Student learner support**

Online students gain support from external resources offered at the institution. This support will come from the faculty, information technology department and guidance/counseling
departments. Moore and Kearsley (2012) stand firm on importance of guidance coming early in a
course or program to elevate problems however, they also state that guidance can come at any
time during a course or program. Moore and Kearsley (2012, p. 173) break student support into
five categories; orientation and admissions, administrative assistance, study skills, crisis
intervention and social interaction with peer’s. Armstrong (2011) states the student learner want
the faculty to be present in the classroom. This means that the teacher is available, involved and
responsive, providing feedback in a timely manner. It is essential that students understand that
they will be faced with different pedagogical challenges in the online arena than in the f-2-f
arena (Meloncon, 2007). Students will be using metacognitive skills when they are in the online
classroom, along with deciphering which strategies are appropriate and at what times (Meloncon,
2007). Meloncon (2007) discusses the need for synchronous sessions as a way to unite the
students, regardless of their geographical location. Naidu (2004) and Meloncon (2007) have
similar viewpoints associated with managing the geographical location differences. Story
centered approaches are a form of support for the student to facilitate a better understanding of a
concept (Naidu, 2004). By developing analogies through stories associated to real life situations,
the learner will be able to better identify with a concept. As the younger generation, who has
indulged in online gaming, enters the online educational environment, they will need to see there
is a different behavior required in the virtual classroom to remain focused on education (Beyer &
Bruhn-Suhr, 2004). Faculty and fellow classmates are a form of support and motivation for the
online learner to become a successful learner.

**Faculty support**

Faculty support must be given to the students and faculty must receive support from the
institution at which they are employed. Faculty themselves are, in essence, learners, and in need
of support (Meloncon, 2007). Faculty will need time allotted into their busy schedules for reading and understanding technologies within the digital landscape, in order to run a successful virtual classroom (Meloncon, 2007). By studying the online technology, the faculty can decide if and when they are ready to introduce it into the virtual classroom (Meloncon, 2007). Smith and Drago (2004) also support the important concept of faculty needing to keep current with technologies that the students will be using. Faculty must understand the importance of an organized virtual classroom resulting in a more positive and productive learning environment (Armstrong, 2011). Besides organization, Meloncon (2007) notes four other areas of which the faculty will need to have a clear understanding to maintain an engaged virtual learning environment. These areas are: institutional, managerial, personal, and technical. Higher educational institutions must hold seminars and in-service training programs for their faculty on a regular basis for the faculty to attain and maintain the high-level skills needed for online teaching (Oğuz, 2013). For faculty to be productive and successful in the virtual classroom, the institution must stand behind them with ongoing opportunities for continued technology training.

**Correlation with student and faculty support with DH**

While student and faculty support are both essential to success in the virtual classroom, DH educators and administrators need to embrace technology and offer more DE classes. Grimes (2002) discusses how DH is behind the nursing educational platform in offering DE for DH programs.

In 2000, ADHA circulated a survey to 255 DH directors on the use and implementation of DE in their respective programs. Sadly, only eight surveys were returned, negating the possibility of any meaningful data analysis (Grimes, 2002). Nonetheless, of the eight surveys
returned, it was evident that these program directors considered that there were more advantages than disadvantages to online course/programs.

Advantages

- Convenient access for students
- Student access at multiple sites
- Students attending school while maintaining employment
- Ability to teach outside the classroom or local/area
- Flexibility in the curriculum to attract students
- Enhanced critical thinking skills
- Organization and efficiency
- Better utilize faculty resources
- Broad range of learning styles covered
- Monitor student progress
- Ability of faculty to make changes to curriculum
- Increased student responsibility
- Increased discussion
- Improved learner interaction
- Expansion of accredited
- Dental hygiene programs to reduce risk of preceptor trained dental hygienists
- Ability of students to interact in a nonthreatening environment

Disadvantages

- Limited computer access, equipment, and skills of students
- Decreased student contact and discussion
• Labor-intensive demands on faculty
• Learning curve for faculty and students to use technology
• Assertive students overpower others
• Limited value for preclinical and clinical coursework
• Technological issues
• Attention span of students at distant sites

It is apparent the DH educators need the educational institutions to stand behind them by allowing time to learn and experience the educational digital platform being used by the students to produce engaged, non-isolated or frustrated DE DH students.

Moore and Kearsley (2012) address online education and emphasize the need for ongoing organizational structure including collaborative constructivist learning, and the mix of technologies ranging from text to audio to video and combing them into one learning platform. There is emphasis placed on organizing content into units and maintaining a good document layout. Moore and Kearsley (2012) clearly report the need for faculty that are not familiar with advanced digital technology to learn it prior to conversation of f-2-f to online courses. It is reported that faculty in fact are demanding training in distance teaching technologies (Moore and Kearsley, 2012). The dental educator must have a clear understanding of organizational structure in developing an online didactic portion of a DH program in order to engage the learner and produce a motivating successful learner.

Analysis

There is ample evidence in the literature supporting the need for DH DE educators to have a thorough understanding of the need for support services for an online program to be successful. Dental hygiene educators must understand the fundamental concepts which are
associated with DE, and how other concepts are significant in understanding and applying support services for the learner and faculty.

**Fundamental concepts and how they related to DH DE**

A degree in DH cannot be earned solely online as a clinical, hands-on, component is essential to the development of a competent reregistered DH. However, the didactic portion, or pre-clinical courses, can be taught online. At the undergraduate level, a DH student may be eligible for licensure after satisfactorily completing Associates degrees (AS) or a Baccalaureate (BS) degree program. There are also programs that offer a Degree Completion Program (DCP), specifically for the AA students to complete their studies and earn a BS in DH. Finally, many institutions also offer graduate programs, awarding a Master’s degree in DH. A doctoral program in DH does not yet exist. This paper will focus on the BS level of DE DH, with a review of the application of these fundamental concepts in relation to DH.

**Transactional distance**

Barnes (2007), supports using DE as a means of offering more Degree Completion programs for dental hygienists who are practicing in a clinical setting with the ultimate goal of producing more dental hygiene faculty. For example, in the state of Maryland there are seven dental hygiene programs. Only one of those programs offers a BS or a DCP. Offering more of the courses in an online environment will produce more advanced educated dental hygienists and increases the potential for producing more DH educators. Transactional distance learning is an educational interplay between teachers and learners in an environment where they are not physically present at the same time and/or not located in the same geographical area. The development of special learning patterns and behaviors for the learner and the teachers must be established because it affects both the student and the instructor.
Self-directed learner

Olmsted (2010) supports the concept of BS and DCP to be online stating that to attain this degree, a portion, if not all of the program does not have a clinical component. This fact makes it easier to incorporate a variety of online teaching possibilities. The students undertaking the advancement in their careers are dedicated students who are goal-oriented and who fully expect to be successful self-directed learners.

Empathy

Grimes (2002) support offering portions of the BS and DCP online. She emphasizes that, with an online program, students will have greater flexibility to better themselves, especially those with family and personal responsibilities. She reports that the students found online programs to be extremely convenient, with the major disadvantage being the students felt isolated. The faculty who are teaching the online courses will need to keep in mind students’ need for connection and flexibility at the onset.

Technology

With the continued advances in technology, educational opportunities are burgeoning in the university setting. Olmsted (2010) state that with this increased growth pattern, advanced technology is offering more options for students to earn DH degrees.

Instructional design and student faculty preparedness

Alternate delivery methods, LMS, are being offered in DH programs. Educators will need more training to keep up with these changes and learn how to turn their f-2-f classes into online classes (Olmsted, 2010). Faculty, who want to remain vibrant educators, will need to embrace technology opening and get the support they need to succeed and help guide the student to succeed.
A preliminary survey will be designed for future dissemination to graduates of DH DE programs. The survey will be designed using a Likert-type scale. According to Hartley (2013), Likert-type scales are the most popular effective when used in surveys. The questions will be arranged with the negative pole response on the left and the positive on the right side (Hartley, 2013). The preliminary survey has been included in this paper.

Pilot Study Questions:

Demographics:

1. Are you a resident in the state you of Maryland?
   a. Yes
   b. No

2. What was your home situation?
   a. Living with parents
   b. Living with spouse
   c. Living with spouse and children
   d. Living with friends
   e. Living alone
   f. Other

3. Why did you choose the program?
   a. Travel commitment
   b. Family schedule
   c. Time commitment
Financial considerations:

1. What financial considerations made you choose DE DH program?
   a. Cost of living near or on campus
   b. Less expensive to live at home
   c. Both A and B
   d. Other

2. Did/do you have student loans?
   a. Yes
   b. No

During the course:

1. I felt isolated during the course?
   a. strongly disagree
   b. disagree
   c. neutral
   d. agree
   e. strongly agree

3. If you felt isolated, what factors contributed to this?
   a. Limited direct student contact
   b. Limited direct contact tot faculty
   c. Issues with the LMS
d. Challenges with technology

4. On a daily basis, how much time was devoted to your online didactic studies?
   a. 1-3 hours
   b. 4-6 hours
   c. 7-8 hours
   d. 9 or more hours

5. Where were group projects in which you had to work with traditional students?
   a. Yes
   b. No

6. Did you think the group projects were educational?
   a. strongly disagree
   b. disagree
   c. neutral
   d. agree
   e. strongly agree

7. Did you have synchronous sessions with f-2-f students?
   a. Yes
   b. No

8. Were they convenient for your schedule?
   a. strongly disagree
   b. disagree
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c. neutral
d. agree
e. strongly agree

9. Did you have asynchronous sessions with f-2-f students?
   a. Yes
   b. No

10. Did you feel a part of the group?
    a. strongly disagree
    b. disagree
    c. neutral
d. agree
e. strongly agree

11. I rarely spoke with an advisor during the program.
    a. strongly disagree
    b. disagree
    c. neutral
d. agree
e. strongly agree

12. It was easy to get an appointment with my advisor.
    a. strongly disagree
    b. disagree
    c. neutral
d. agree

e. strongly agree

Post course completion:

1. As a distance education student, I believe I missed out on “the college experience”.
   a. strongly disagree
   b. disagree
   c. neutral
   d. agree
   e. strongly agree

2. I was satisfied with my DE course preparation.
   a. strongly disagree
   b. disagree
   c. neutral
   d. agree
   e. strongly agree

3. I was satisfied with my board exam results.
   a. strongly disagree
   b. disagree
   c. neutral
   d. agree
   e. strongly agree
4. I believe my DE didactic classes adequately prepared me for my clinical experiences.
   a. strongly disagree
   b. disagree
   c. neutral
   d. agree
   e. strongly agree

5. I would recommend DE DH program to others.
   a. strongly disagree
   b. disagree
   c. neutral
   d. agree
   e. strongly agree

6. If not, why not?

7. After graduation and licensure, I anticipate not having any problems finding a job as a Registered Dental Hygienist.
   a. strongly disagree
   b. disagree
   c. neutral
   d. agree
   e. strongly agree
Conclusion

This research project has reviewed course development, student/ faculty preparedness and learner support in DE, with a focus on including DH educators within the ranks of DE teachers at the baccalaureate level. The fundamental concepts of DE are transactional distance, a self-directed learner, empathy, technology and instructional design. There are seven main lessons which center on developing a course that has complete support services. Both of these concepts were explained and are supported by the literature. These concepts were definitively related to DH DE courses/programs.

A pilot survey has been proposed for graduates of DH DE programs. The purpose of this survey would be to assess student satisfaction with the limited number of DH DE programs already extant. Courses should be developed for DH educators that would help them to better understand transitioning from f-2-f classrooms to the virtual classroom. More research is needed to explain why there are so few DH DE programs. The development of a survey for DH faculty and administers should be designed and circulated to all dental hygiene faculty.
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