Can Course Design in an Online MAT Program Promote Personalized Learning through e-Teaching and e-Learning Practices?

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Abstract—The current study sought to determine if the Master of Arts in Teaching (MAT) program design promoted personalized learning in the LMS platform, Webtycho. Personalized learning provides a medium to improve efficiencies in learning. Personalized learning is not directed or paced so much by the teacher as it is by the student's own ability and capacity to acquire knowledge [1]. A qualitative case study, paired with quantitative data, will corroborate indications, through triangulation, of some, or all, of the seven multiple intelligences learning styles, student e-teaching practices demonstrated, and e-teaching practices employed, to determine if personalized learning has occurred with current MAT students. A recommendation of ways to meet the learning needs of all current and future students in the MAT program will be provided.

Index Terms—Personalized learning, e-learning, e-teaching, teacher education.

I. INTRODUCTION

There are those that claim that personalized learning is implicit in an online learning environment due to the nature of the platform [2]. Yet, creating personalized learning stems more from an individual context of learning style than the type of platform used. According to a study conducted by Ref. [3], comparing online learning outcomes to on site learning outcomes, found no difference between grades students received in either format. Ref. [4], having analyzed much online instruction, demonstrated that asynchronous online courses are effective when compared to traditionally delivered courses. Yet, it is difficult to find research on the topic of course design as a variable in outcomes achieved by students and not just student satisfaction. One study conducted by Ref. [5] studied the effect of course design of an online course and identified variables that positively affected problem solving and collaboration skills of the students. Greater research is needed to support the need for personalized learning and how it can best be conducted in online courses to facilitate student achievement. In a program that seeks to train educators, it is necessary to determine the best practice to ensure high quality outcomes of achievement. If best practice in online instruction encompasses personalized instruction and content, the teacher candidates that we train must be able to apply the same best practice whether they teach in a traditional middle or high school or in a virtual middle or virtual high school. Identifying and modeling best practice though course design, will enable the MAT teacher candidates to be leaders in the field of education [7].

II. METHODS

A. Rationale and overview

The current study sought to determine if the MAT program design promoted personalized learning. The various learning styles preferred by the students were identified, and coded, by using and applying Howard Gardner’s Multiple Intelligences Theory through provision of two Likert type surveys placed in all MAT courses during a Summer semester; a record of student preference of learning style was created. Once preferred learning styles were identified, based upon the multiple intelligences surveys, a compilation of the students’ preferred assignment deliverable styles was classified in terms of the seven Multiple Intelligences. For example, students who create a majority of visual deliverables, such as a website to share a video version of a lesson plan or webquests, would be identified as having visual/spatial learning styles. Learner centered strategies used in the UMUC MAT courses that reflected effective e-teaching practices were also be identified and coded. Personalized learning was then measured through use of a qualitative case study, paired with quantitative data, that used triangulation (the convergence of data from multiple data collection sources) of learning styles identified through the seven multiple intelligences surveys, the e-learning practices demonstrated through identification of the assignment styles submitted, and the e-teaching practices used to facilitate learning. The purpose was to determine what types of personalized learning has been achieved. Achievement of personalized learning identified following analysis of congruence among the three variables led to...
recommendations for ways to improve personalized learning.

B. Objectives and Hypothesis

The objective of the study was to analyze the current course design in the MAT program to develop an effective e-teaching framework in order to strengthen personalized learning. Additional objectives included the development of maximum human potential and to increase student achievement in the MAT program at UMUC. Based upon the proposed objectives, the following hypothesis was developed: 1) Students would receive better grades if the e-teaching and e-learning opportunities presented in the MAT courses are consistent with the way students perceive they learn best, 2) By providing a variety and choice of e-teaching and e-learning opportunities would be an effective way to personalize learning (Differentiated Instruction), 3) Current MAT courses may not provide enough choice of e-teaching and e-learning opportunities.

C. Participants

The research population included MAT students who were taking courses in the Summer of 2011. All 70 students were sent a survey to determine their perceived learning style. Of the 70 students surveyed, 56% responded to the survey. In addition, grades of MAT students were reviewed from Spring 2011 and Summer 2011 in 4 of the courses offered and that were comparable, which included a total of 100+ students.

D. Data Collection

Data were also collected within all MAT courses to identify e-teaching and e-learning variables. Each e-teaching and e-learning variable was identified and classified by reviewing each online course offered during the Spring and Summer of 2012. Those variables associated with personalized learning in the MAT program were identified and classified. In addition, students who were currently enrolled in Summer 2011 were sent a survey where they were asked to answer questions that would indicate their perceived favored learning style. The data were collected and triangulated in order to review the current courses in the MAT to program to better facilitate personalized learning.

E. Methodology

Triangulation of Data occurred following collection of the Teacher candidates perceived learning styles as identified by the surveys distributed in Summer 2011. Data sources were collected through grade books and grades from Summer 2011. E-teaching variables were identified and designated by reviewing the online course teaching strategies and types employed and e-learning variables were identified and designated by reviewing assignment choice options within each course.

F. Design, Procedures, and Data Outcomes

The design of the study was a combination of qualitative and quantitative research strategies. Data and methodological triangulation were used. Data triangulations entailed gathering data through several sampling strategies, of which survey, course content review, and grades were collected, and, between-method triangulation involved contrasting research methods which were the survey, the grade review as well as quantification of percentage of e-teaching and e-learning opportunities.

The data collected through the use of the personalized learning styles inventory resulted in the following:

<table>
<thead>
<tr>
<th>Learning Style</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auditory</td>
<td>26</td>
</tr>
<tr>
<td>Visual</td>
<td>32</td>
</tr>
<tr>
<td>Kinesthetic</td>
<td>27</td>
</tr>
<tr>
<td>Combination</td>
<td>15</td>
</tr>
</tbody>
</table>

Auditory referred to those who indicated that they learned best by listening to new material. Visual referred to those who indicated that they learned best through visual representation of material, such as printed text. Kinesthetic referred to those who indicated that they felt that they learned best when they were more actively engaged in their learning, such as being involved in an active online discussion through Skype or a webinar or through a chat room where a project is being jointly created. Combination refers to those who indicated that they believed they learned best when they had materials presented visually and with auditory support, such as through the use of videos.

The e-teaching experiences that were identified in each course during Spring and Summer 2011 were coded and counted. The identified experiences were codes as follows: video, website use, online activity, webinar, guest speaker, Wimba (www.wimba.com/products/wimba_classroom), audio, written material, f2f in vivo. Based upon the actual number count, there were more written e-teaching strategies used in Spring 2011 than any one other teaching strategy (with the exception of face to face in the internship course that is not offered in the summer). And in Summer 2011, there were still primarily written strategies used most frequently but there was an increase in the number of websites used as well as an increase in all other identified e-teaching strategies.

The amount of e-learning opportunities were also identified and were classified via the type of assignments that were required in each of the courses reviewed during both Spring and Summer 2011. The % of e-learning
opportunities over all courses in both Spring and Summer 2011, resulted in an overwhelming 70%+ in the use of required written assignments with no other choice allowed and between 20- 25% use of multi media enhanced choice to develop a required assignment.

The number of A grades were also compared between Spring 2011 and Summer 2011 in order to determine if there might be any evidence of a relationship between the grades and the types of assignments required. Therefore, it was hypothesized that by requiring more written assignments, may not have resulted in many A grades for those who self-identified as anything other than a visual learner. The results of this comparison were inconclusive with the exception being that there were more A grades in one particular course that added more variety of e-teaching rather than e-learning opportunities from Spring to Summer: EDTP 645 – Subject Methods and Assessment - 21% A grades in Spring 2011 and 43% A grades in Summer 2011.

Once the data sources were collected and analyzed individually, the triangulation began. By looking at a variety of variables, it was possible to recognize subtle changes that occurred between semesters and enabled identification of both e-learning and e-teaching strategies that were used and/or were lacking. Based upon the review of data, proposed changes can be made and implemented in a systematic way and a definition of how best to personalize learning can be created for the UMUC MAT program.

The next step was the analysis and the identification of personalized learning factors as compared to the traditional learning models. The comparison of learner as a constant to the learner as a variable [6], as well as interaction and process as key variables, were added to the overall description of the need for differentiated instruction as a practice in the UMUC MAT program.

III. RESULTS AND DISCUSSION

The results indicated that most students identified themselves as visual learners, yet self-identified auditory and kinesthetic learners were almost equal in number of respondents. Research has indicated that the majority of learners learn best through the use of a combination of multiple learning methods. However, if an individual perceives that they learn better through one learning style over another, that is a variable that must be considered and provided so as to assist in the greater self-efficacy and success of the individual student. In MAT courses that provided more variety of learning experiences and more choices in assignment presentations, the students did not necessarily have better grades than those in courses that used and/or expected less multi-media applications (visual/kinesthetic/combination). The data did indicate that all students in the Spring 2011 and the Summer 2011 semesters were learning, as evidenced by the large percentage of A and B grades (please see Chart 2). However, there was no indication that personalized learning was affected by course design. As indicated by Ref. [6], personalization of instruction and of learning is the total effort of the instructor and his/her course design to identify individual student characteristic, even within an online environment, and their students’ needs. The result should be the use of flexible instructional practices in an environment that is supportive of learning.

While no conclusive evidence was found to support that hypothesis that students would receive better grades if e-teaching and e-learning opportunities were presented in a consistent manner with the ways that students perceived that they learned best, most students identified their learning styles with the way that most courses were providing the bulk of e-teaching strategies. The number of choices for e-learning opportunities was much more limited than that of e-teaching strategies used in most courses. It does then appear that it would be beneficial to develop more e-learning choice/options of for students in the UMUC MAT program. Development of e-teaching may not be as readily embraced due to time and money constraints and the need for students to understand material across a wide realm of learning media rather than being able to consistently select that which is ‘easier’ for the student. The initial research led to more questions that will need to be researched in the near future: Is there any need to increase the types of e-teaching and e-learning choices within courses? Would kinesthetic learning be...
considered ALL online learning modalities? Is it necessary to consider kinesthetic learning at all? Is it necessary to analyze the individual characteristics, attributes, aspects, and relations to learning objects and their properties in MAT or other UMUC courses to address personalized learning?

Based upon the results, a definition of personalized learning for the MAT program at UMUC would be: Personalized learning encompasses both the environment and the individual student and by preparing for a diversity of learners in any one online classroom, the learning platform should provide for all learners. The learning management platform (LMS) should be organized to provide for the delivery to the students in the form of visual, auditory, and all other types of learning style strategies within the context of the class curriculum. Once that is embedded into the learning, the e-teaching opportunities should be similarly allowed in their delivery to the instructor.

ACKNOWLEDGMENT

I would like to acknowledge Dr. Jay Liebowitz, Orkand Chair at UMUC, for instituting and supporting the Faculty Research Graduate School Grants program at UMUC, which supported this research project.

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Manuscript received 30 March 2012. This work was supported in part by the Faculty Research Support Grant, UMUC Graduate School.

Published as submitted by the author(s).