FINAL REPORT

Faculty Training on Quality Matters Standards and Student Perceptions of Online Course Design: A Longitudinal Study

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Introduction

Enabled by the advances in information technologies, online learning represents one major future direction of higher education for its numerous advantages. Compared with traditional in-classroom courses, online courses provide students more flexible and economic options (Twigg, 2003). Yet the quality of online courses is hard to control, which contributes to their lower completion rates than face-to-face courses (Kearsley, 2000; Xu & Jaggars, 2011).

Since the early stage of online education, researchers have recognized the importance of faculty training and development to reduce their resistance to online teaching methods and sharpen their skills to design and deliver online courses (Berge, 1998; Palloff & Pratt, 2001). Nevertheless, empirical findings consistently point to the lack of training as one of the major barriers to the quality improvement of online education (Conrad, 2004; Allen & Seaman, 2010).

Meanwhile, educational institutions provide various online teaching training programs to prepare their faculty members for the challenge of online teaching (Goodyear et al., 2001). Yet the effectiveness of faculty training programs has been a concern of online education researchers as well as the faculty members themselves (Kosak et al., 2004; McQuiggan, 2007). Unless the concern is not sufficiently addressed, instructors are unlikely to actively participate in training, and schools may be hesitant to set aside resources for such program offering.

Online education should be learner-centered, and students are at the best position to evaluate online course quality. The purpose of this study is to investigate the causal relationship between faculty training on Quality Matters standards and online
course quality as perceived by students. Based on literature review, this study first identified independent and dependent variables and hypothesized relationships between them. To test the research hypotheses, it further collected empirical observations with a survey. Based on the results of statistical analyses, the implications of the findings were discussed.

**Research Background**

Under the initiative to set up a national benchmark for online course design, educators established the Quality Matters (QM) program to assist continuous improvement of online education (Moore & Kearsley, 2012). The program is a faculty-driven peer review process to facilitate the evaluation of online courses with comprehensive rubrics (Legon, 2006). The ultimate purpose is to enhance student learning through the quality assurance of online courses.

The QM rubrics contains 41 specific review standards to make sure that the following key components of online course designs align with each other: 1) learning objectives, 2) assessment and measurement, 3) instructional materials, 4) learner interaction and engagement, and 5) course technology (Quality Matters, 2013). The rubrics offer instructors a template to review and improve online course designs, and assure educational institutions of online course quality with sufficient confidence (Parscal & Riemer, 2010).

The Quality Matters review process of online courses requires additional faculty development and training (Shattuck, 2010). Such training programs not only familiarize online instructors with the comprehensive set of standards but also lead to smooth transitions from in-class lecturing to online teaching in terms of general philosophy as well as specific methods. Yet few studies have investigated the effects of faculty Quality Matters training on student online learning experiences.
In particular, it is not clear whether the participation in Quality Matters training helps instructors improve online course quality indeed. The ultimate criteria for the evaluation online course quality should be based on the feedback of students. As the “consumers” of online education, students are what matters in the end. Thus it is necessary to assess the effectiveness of Quality Matters training from the student perspective.

At the institutional level, researchers have discussed and examined the role of faculty training and support in online education. For instance, Covington, Petherbridge and Warren (2005) proposed a triangulated support approach to support faculty’s transition from face-to-face lecturing to online teaching with administrative support, professional development and peer support. Administrative support and professional development are closely related to faculty training. For Quality Matters training in particular, the school authority needs to adopt the standards, and provide some incentives for faculty members to attend the training programs.

At the individual level, the main interest of researchers has been focused on the effectiveness of training program from faculty perspectives. Based on the responses from faculty participants of an online pedagogical training program, Gold (2001) found that such programs may significantly change teachers’ perceptions of online instruction as potentially more participatory and interactive than face-to-face instruction. The results of some case studies suggest that faculty development programs smoothens instructors’ transitions from face-to-face lecturing to online teaching (Kim & Bonk, 2006). Based on the survey among almost one thousand faculty members, Shea, Pickett and Li (2005) found that faculty development programs on online course development directly affect faculty satisfaction and acceptance of online education.

On the other hand, researchers rarely examine the effect of faculty training programs on the quality of online courses from the student perspective. Based on the
review of empirical studies on faculty development using different methods (quantitative and qualitative), McQuiggan (2007) identified nine topics related to online teaching training effectiveness, but none of them concern the student perspective. Meanwhile, the e-learning technology has the potential to change the nature of pedagogy to meet the needs of students in knowledge society (Garrison, 2011). Therefore, it is important to include student-side impacts into the equation when researchers examine the effectiveness of online teaching training programs.

There are different approaches to assess student-side impacts, and any single approach is not sufficient for comprehensive evaluation of course delivery (Fenwick, 2001). For instance, final course grade is probably the most common one used to evaluate how well each student learns from a course, but it alone is not enough to measure the effectiveness of teaching (Barr & Tagg, 1995). A student is likely to get a better grade from a well-designed course than from a poorly-designed course. However, the grade also depends on many other factors, such as how motivated, prepared and diligent a student is. Thus, researchers found only marginal relationship between student grade and course evaluation (Johnson, 2002; Gigliotti, & Buchtel, 1990).

Rather than just the grades that they receive, students mainly base their evaluations of a course on its design and delivery (Remedios & Lieberman, 2008). Among different measures, researchers find that student course evaluation to be generally reliable and valid (Centra, 1993; Hobson & Talbot, 2001). The perceived course quality of students is not often strongly correlated with the grades that they receive, which depends on many non-course factors (Johnson, 2002; Gigliotti, & Buchtel, 1990). Actually, student perceptions of course organization and delivery are more reliable than rapport with students and fair grading (Jirovec, Ramanathan & Rosegrant-Alvarez, 1998; Chen, & Hoshower, 2003). Thus, student feedback provides a viable way to evaluate the quality of online courses (Driscoll et al., 2002).
Research Hypotheses

The independent variable of this study is faculty training that indicates whether a faculty member has participated in Quality Matter training before teaching the online course surveyed. The dependent variables are student perceptions of online course quality from different aspects of Quality Matter Standards. The effects of faculty training on online quality can be assessed by comparing student perceptions between the different levels of independent variable. The main premise is that if faculty training improves online course design, students shall perceive the enhancement during course delivery.

There are five aspects of Quality Matter standards, and correspondingly there are five dependent variables. They are: learning objectives, outcome assessment, instructional materials, learner interaction, and course technology. The Quality Matter training provides faculty members specific guidelines on how to enhance each aspect in the design of online courses. Thus, there is a research hypothesis proposed for the relationship between the independent variable of faculty training and each dependent variable.

First of all, Quality Matters training emphasizes the importance of clear and well-defined learning objectives in online courses. In traditional face-to-face courses, an instructor has the chance to explain learning objectives to students in person, especially when students ask questions about them. But in online courses, ambiguous learning objectives lead to student confusions through the course. The training provides faculty members various templates to write clear learning objectives, and facilitate their deeper thinking on course organization and learning activities. Hence, the first research hypothesis is as follows:

H1: Faculty training has a positive effect on student perception of learning objectives.
In addition to learning objectives, instructors of online courses need to give detailed grading policy for each type of assignments. Quality Matters training provides faculty members guidelines on how to specify the grading rubrics for discussions, assignments and projects. Instructors are also encouraged to make the clearly stated rubrics available to students. When students are informed of the grading policy beforehand, they are aware of what they need to do for each assignment. This leads to the second hypothesis:

H2: Faculty training has a positive effect on student perception of outcome assessment.

Instructional material comprises the main content of an online course. In addition to traditional material such as PowerPoint slides, the Quality Matters training encourages instructor to use other forms (e.g. video, simulation) on electronic platforms. The clarification of learning objectives and assessment methods is also helpful for an instructor to prepare instructional material in alignment with them. Thus the next hypothesis is as follows:

H3: Faculty training has a positive effect on student perception of instructional material.

One major challenge of online education is the lack of face-to-face interactions between instructors and students as well as among students. Quality Matters training emphasizes the importance of student participation, and introduces different ways to enhance instructor-student and student-student interactions. In particular, faculty members are encouraged to use active learning methods, such as hand-on exercises and group projects, in online courses.

H4: Faculty training has a positive effect on student perception of learner interaction.
Faculty members deliver online courses through the use of platforms such as BlackBoard and WebCT. The advances in information and communication technologies (ICT) lead to the emergence of various e-learning tools such as discussion board and web conferencing. Quality Matters training typically go through how to use different e-learning tools for different purposes. The use of such tools may enhance outcome assessment, instructional material and learner interaction. Therefore, here is the last hypothesis:

H5: Faculty training has a positive effect on student perception of course technology.

Methodology

It takes time for the faculty training to take effect, that is: there is a lag between faculty training and online course delivery. Thus, this study collected data in a longitudinal manner. On the faculty side, it keeps track of the faculty members who participated in Quality Matters training program. On the student side, it collected survey observations from students to find out whether the faculty participation in training programs in Quality Matters standards positively affects online course quality. If the findings provide a positive answer to the research question, there is supporting evidence to the claim that the participation in the Quality Matters program leads to the improvement of online education quality.

Experiment Design

This study adopts a quasi-experiment design as complete random design is not possible in this study (i.e. we cannot force a student to select or not select a course). In the control group, students take online courses taught by faculty members who have not participated in QM training. In the treatment group, students take online courses taught
by faculty members who have participated in QM training. Though subjects were not randomly assigned to two groups, they did not know whether an instructor had participated in the QM training or not throughout the process. Thus, faculty training status does not have any influence on student course selection, and the subjects in two groups are not supposed to be systematically different from each other. The differences in the dependent variables detected should mostly be due to the treatment.

During an online course, it is assumed that faculty members who have gone through Quality Matter training program will design online courses following the requirement of standards. Students who take online courses of different designs are likely to yield different levels of outcomes. Though it is possible that a faculty member may or may not implement an online course following Quality Matters standards even after the training, but such compliance issue is still a major aspect of training program effectiveness. That is, if a training program is effective, most of the attendees shall follow the guidelines provided in the training.

Subjects

The subjects comprise 122 undergraduate and graduate students from a Southwest university. Subjects in the treatment group took the online courses taught by faculty members who had already attended Quality Matters training, and those in the control group took the online courses taught by faculty members who had not yet. The sample sizes in two groups were not exactly the same but still relatively balanced in a ratio of two to three. The gender distribution is quite even: about one half were females and the other half were males. In terms of on e-learning experience, most participants had taken five to six online courses before, and was taking one or two online courses at the time of survey.
**Measurement**

The measures of dependent variables were adapted from Aman’s (2009) Student Satisfaction Instrument. For each aspect of Quality Matters standards, learning objective, outcome assessment, instructional materials, learner interaction, and course technology, there is a set of questions to ask student perception in terms of approval level with a particular online course. All items are of Likert-type scale with five levels: strongly disagree, disagree, neutral, agree, and strongly agree.

**Data Collections Procedures**

During the second half of an online course, an email invitation that contained the link to the online questionnaire was sent to the enrolled students. After about one week, a follow-up reminder was sent to students. The overall response rate was around 65%. To identify possible non-response bias, the early responses (those received before reminder) and late responses (those received after reminder) were compared. There were no significant differences between two sets of responses. This suggests that the non-response bias was not a big concern.

**Data Analysis Procedures**

The main statistical technique used to test the research hypotheses is the independent sample t test. All the research hypotheses are directional, that is: the independent variable has a positive effect on each of the dependent variables. Therefore, the hypothesis testing is one-tailed rather than two-tailed by default. First, reliability analysis will be conducted to assess the internal consistency of item responses for each dependent variable. If response reliability is acceptable, the index score of each variable will be calculated for subsequent t test. Also, descriptive statistics including mean and standard deviation from descriptive analyses will be reported.
Results

Table 1 gives the results of reliability and descriptive analyses. The reliability coefficient that this study used is Chronbach’s alpha that indicates the internal consistency of responses to the items that measure the same variable. If an alpha is greater than 0.7, it indicates that the measurement error of the items is under control. In this study, the measures of all dependent variables exhibited acceptable level of reliability as they are around 0.8 or higher. The relatively high reliability of item responses support the calculation of index score for each dependent variable based on the average of item scores.

The descriptive statistics showed that all average responses were above the neutral point of three, and the standard deviation is around one or lower. Thus, participants have generally positive perceptions of online courses. As expected, the treatment group exhibited higher average responses on all the dependent variables than the control group. On the other hand, the standard deviations of the responses in the treatment group were lower than those in the control group. The results suggest that the faculty training lead to relatively more positive and consistent perceptions of students on online course quality.

Table 2 shows the results of statistical tests to examine whether the differences are significant or not. The null hypothesis of each research hypothesis is that there is no difference between the treatment group and control group in the average values of the corresponding dependent variable. The p-values of t statistics indicate that one difference was significant at the 0.05 level, three differences were significant at the 0.1 level, and one difference was not significant. Specifically, there was a strong supporting evidence of Hypothesis Four (H4) on the effect of faculty training on learner interaction. Hypotheses One, Two and Three (H1, H2, and H3) were marginally supported, indicating that faculty training had some impact on learning objective, outcome
assessment, and instructional material. However, faulty training did not improve the use of course technology as perceived by students

**Conclusion and Implications**

This study investigates the relationship between faculty training and student perceptions of online course quality. It hypothesizes that if instructors have gone through Quality Matters training, students who take their courses will have more positive perceptions in terms of learning objective, outcome assessment, instructional material, learner interaction and course technology. Observations were collected from a quasi experiment in which students are divided into a control group and a treatment group depending on faculty training status. The results suggest that faculty training significantly enhances learner interaction. Its effects on learning objective, outcome assessment, and instructional material are marginally significant. Yet, faculty training does not seem to have much influence on the use of course technology.

The main limitation of this study is that it does not take other factors that may also influence the dependent variables into account. For example, faculty members in this particular institute need to also go through a BlackBoard training program in order to teach an online course. Yet, it is up to the faculty members who have previous obtained the certificate to decide whether or not to go through the training on the new BlackBoard Learn platform, which incorporate many new course technologies, such as discussion board and wiki. Compared with Quality Matters training, Blackboard Learn training may have a stronger effect on the course technology variable. The exclusion of such a more direct cause may explain why the corresponding hypothesis (i.e. H5) was not supported.

Nevertheless, the results provide supporting evidence for most of research hypotheses. This suggests that Quality Matters training does help instructors improve the quality of online courses that they teach. In particular, the training enhances learner
interaction in the virtual environment. This is probably related to the fact that Quality Matters training emphasizes the role of facilitators rather than lecturer for online instructors. Online education is often criticized for the lack of interactions compared with face-to-face education. The results of this study suggest that Quality Matters training is effective to address this concern.

In addition, the findings suggest that the Quality Matters training enhances online course design in terms of learning objective, outcome assessment and instructional material. Compared with learner interaction, these aspects are more course-specific. That is, they also depend on other factors such as subject area and instructor expertise. This may explain the marginal effects of Quality Matters training on these dependent variables. Even though the Quality Matters training program may not be sufficient by its own on those aspects, it is still helpful.

The findings also provide some practical implications at the institutional level. It is worth the effort and resources for administrators to provide faculty members online teaching training programs, especially on Quality Matters standards. They may even consider giving some incentives to faculty members to participate in such training programs. On the other hand, faculty members should seek every opportunity to attend such a training program in order to enhance their online teaching. If all the faculty members go through the training, the quality of online programs may be assured to a large extent.
References


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Distance Learning Administration, 8(1). Retrieved on October 19, 2013 from: https://www.westga.edu/~distance/ojdlaspring81/covington81.htm


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<th>Dependent Variable</th>
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<td>Learner Interaction</td>
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<td>3.99 (1.03)</td>
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<tr>
<td>Course Technology</td>
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<td>4.25 (0.84)</td>
<td>4.15 (0.88)</td>
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Table 2  
Hypothesis Testing

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Follow-up Report

Funding Agency: Academic Partnerships
Project Title: A Longitudinal Study of Technology-Learning Alignment in Online Program Delivery
Principal Investigator (PI): Jun Sun
Affiliation: University of Texas – Pan American
Project duration: 5/15/2014-3/2/2015

Stage 1 – Data Collection (Completed):
With the grant support, the PI carried out the research activities of a longitudinal study on student perceptions of online course designs in the summer months of 2014. Data was collected from multiple on-line programs at the University of Texas – Pan American with the help of its’ Center of Online Learning and Teaching and Technology (COLTT). Together with the data collected previously, the observations cover a total period of more than one year. They are helpful to trace the changes in student perception of how Quality Matter standards are incorporated in online course designs, especially technology-learning alignment.

Stage 2 – Analysis and Write-up (Completed)
The central hypothesis is that faculty training programs on Quality Matter standards, especially online course blueprinting sessions, have a long-term effect on the improvement of online course designs. The PI has already conducted data analysis to compare student perceptions of online course designs from different aspects of Quality Matter standards between the control group and treatment group. In the control group, instructors have not gone through Quality Matter standards training before or during the development of the online courses from which student participants were elicited. In the treatment group, however, instructors have done so. The results suggest that the faculty training on Quality Matter standards does have significant effects on online course designs, especially the alignment between Course Technology and other aspects, including Learning Objective, Instruction Material, Learning Engagement, and Outcome Assessment. The PI has compiled the results into a report.

Stage 3 – Dissemination of Findings (Completed)
The findings were presented to online-education researchers and practitioners at the 6th Quality Matters Annual Conference in September. Based on the feedback, the PI finalized the research report to be submitted to Academic Partnerships by the end of project. Also, the PI submitted the manuscript for journal publication (Internet Learning) with the acknowledgement of support from Academic Partnerships.

In summary, all project activities were carried out according to the plan and all the costs were controlled within the budget. Enclosed please find the data collected during the process and the research report that describes findings.