

Improving the Online Course in Principles of Management Information Systems

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Abstract— Principles or Foundations of Management Information Systems (MIS) course is taught in business schools in the country. Designing an online course applies the same principles of traditional face-to-face teaching but includes additional considerations. To improve the design and delivery of online courses, educators may follow different types of rubrics. One of these rubrics is developed by Quality Matters (QM), which has developed a set of standards or rubrics for the design of online and blended courses. In this paper, the author will share a course design for Principles of Information Systems that can be employed to both online and blended course. To enhance the quality of the online course, standards designed by Quality Matters have been adopted. Results from student evaluations show positive outcomes.

Keyword: information systems, online course design, quality of online course

I. Introduction

Based on US News Report, the number of students taking online courses is growing, although the rate of growth has slowed down in more than a decade (“Study Shows Sluggish Online Learning Growth for Second Year - US News,” n.d.). The upsurge in online education also witnessed the creation of massive open online courses or MOOCs, which helped to increase the visibility of the offering institutions. In the past, growth in online courses had been so high that institutions have been falling behind in their attempt of finding models of quality control. In 1997, Marshall University (MU) started offering online courses with about 30 courses, which have grown to 180 online courses throughout the year on various subjects. The quality control model at MU involves a multi-faceted approach working within three domains: course development, course delivery, and course evaluation (Heaton, Pauley, & Childress, 2002).

Although MIS has been taught for a number of years in a traditional classroom setting, there have been a growing number of MIS courses being taught online along with the growth of online education, as similar to other business disciplines. In comparison between online and traditional teaching, the quality of learning in students have been better for traditional in-class teaching due to factors such as student interaction, engagement, immediate response from instructors etc. It is of great importance to take steps to improve the quality of online teaching to keep up with the growing student

demand for online courses. There are many rubrics available for developing online courses, namely, those developed by California State University Chico, Towson University, and University of Wisconsin etc. One of the quality standards, developed by Quality Matters (QM), has been used in developing courses for K-12 education as well as higher education (Sener, 2006). The purpose of this study is to develop an online course in principles of MIS using the standards of QM. We hope that applying the standards of QM can greatly help in increasing the quality of online MIS course.

In the next section we will describe the Information systems discipline followed by a section on online learning. After that we will discuss the quality matters standards and develop the online MIS course based on QM standards. The course objectives of the online MIS course and an alignment map to show the mapping of the courses objectives, instructional materials, teaching and learning activities, and assessment strategies will be presented.

II. Information Systems Discipline

Management Information Systems as an academic discipline may have different labels around colleges and universities. As accredited by the Association to Advance Collegiate Schools of Business (AACSB) in the United States, the names given to computer related majors offered in undergraduate institutions are as follows (Pierson, 2008): Management Information Systems (41% of programs); Information Systems (21% of programs); and Computer Information Systems (18%). The remaining 21% of programs are known by various names such as: Information Management, Information Systems Management, Business Information Systems, Business Computer Systems, Business Computer Information Systems, Business Information Technology Management, Business Informatics, Information Resources Management, Information Technology, Information Technology Systems, Information Technology Resources Management, Accounting Information Systems, Information Science, and Information and Quantitative Science.

At a university, there may be more than one computer related programs. Table 1 shows Management Information Systems, Computer Science, and Computer and

Information Technology programs that might be housed in separate colleges in a single university. The prominent factor that distinguishes Information Systems program from Computer Science and Computer Information Technology programs is the business focus.

Table 1. MIS and other computer disciplines

	MIS	CS	CIT
<i>Focus</i>	Business	Software	IT Application
<i>Objective</i>	More efficient or effective business	Reliable computer program	Better use of computer technology
<i>Core skill</i>	Problem solving	Logic/procedures	Problem solving
<i>Core task</i>	Determine business requirements for information systems	Design software needed to meet requirements	Deliver information systems to meet defined requirements
<i>Starting job title</i>	Business Systems Analyst	Software Engineer	Application Programmer
<i>Career goals</i>	Senior Organizational Manager	Programming Manager	IT Application Manager
<i>University home</i>	College of Business	College of IT and Engineering	College of Science

Many colleges have adopted IS 2010 Curriculum Guidelines for Undergraduate Degree Programs in Information Systems. IS 2010 was developed based on the collaborative effort of the Association for Computing Machinery (ACM) and Association for Information Systems (AIS), is a big step revision from its earlier version of IS 2002. The IS 2002 curriculum had a “one size fits all” approach; therefore, there was no separation between core courses and electives. All the courses in the curriculum were required. To overcome the rigidity in the IS 2002 curriculum, the IS 2010 curriculum has identified a set of core courses, which are as follows:

1. Foundations of Information Systems
2. Data and Information Management
3. Enterprise Architecture
4. IT Infrastructure
5. IS Project Management
6. Systems Analysis and Design
7. IS Strategy, Management, and Acquisition

It is important to note that these core courses can be offered as independent courses or as components within a limited number of courses. Essentially, these courses seek to fulfill the core skills and knowledge required by IS professionals. As shown in Table 2, Foundations of Information Systems provide *all students* with an introduction to the purposes, uses, and value of information systems and information resources in organizations. This course introduces

concepts and methods used by IT professionals in developing and implementing systems. Students with IS Minor take additional courses in Information Systems which prepare them for careers as technology liaisons and as functional area representatives. *IS Minors* take courses in Data and Information Management, Enterprise Architecture, and IS Strategy, Management, and Acquisition in addition to Foundations of Information Systems. *IS Majors* take all seven courses and other electives. Students majoring in IS can work in various industries in capacity of systems analyst, systems developer, business application developer, business analyst, IT consultant, network administrator, web developer, technical support specialist, IT development project leader, database analyst, database administrator, IT user liaison, computer & information systems manager etc.

Table 2: IS2010 Curriculum Design for All Students, IS Majors and IS Minors

Groups	Curriculum Model
All students	1. Foundations of Information Systems
IS Majors and Minors	2. Data and Information Management 3. Enterprise Architecture 7. IS Strategy, Management, and Acquisition
IS Majors	4. IS Project Management 5. IT Infrastructure 6. Systems Analysis & Design

III. Online Learning

The attractiveness of an online course is the flexibility for students to manage their time. Because of time flexibility in online courses many non-traditional students prefer it over in class courses. In rural areas, students like the option of online courses owing to long commutes to campuses. The advantages of online learning are being learner centered, offering location flexibility and providing archival capability for knowledge reuse and sharing while traditional classroom learning has advantages of immediate feedback to students, familiarity with the experience, and the cultivation of a social community (Zhang, 2004). One would surmise that traditional courses offer better student learning environment due to richer classroom discussion, interaction and availability of the instructor. This starts raising a concern that online learning may lack the required student interaction among themselves and with their instructor. However, research has shown either that there is not any difference in terms of student performance and satisfaction for online and traditional courses (McFarland & Hamilton, 2005) or mixed results. One study revealed that satisfaction was higher for the students enrolled in the traditional class even though computer self-efficacy was higher for online students (Piccoli, 2001). In a meta-analysis of articles in online learning, authors found that, on average, students in online learning environment performed better than in traditional setting (Means, Toyama, Murphy, Bakia, & Jones, 2009). Online learning has been integrated into various traditional courses to have hybrid courses.

Therefore, rather than comparing online classes to traditional classes it would be useful to understand the factors that will lead to better online experience for students. A critical success factor for student success in online learning has been discovered to be the amount of participation (Morris, Finnegan, & Wu, 2005). The “completers” engaged in online learning activities with greater frequency and greater amounts of time than unsuccessful students. Online learning can offer opportunities to students for in-depth discussion on chapter concepts. Online discussions may actually increase synergy as the students have more time to read and reread messages as a result increasing reflection time and improving the quality of responses (Heckman, 2002). (Conaway, Easton, & Schmidt, 2005) offers specific instructional strategies for increasing student interaction in an online course:

1. Online instructors must recognize their roles as facilitators who monitor discussion and provide feedback. To encourage peer learning, the instructor can model behavior for students by leading the online discussion, summarizing discussion points and providing feedback.
2. The instructor may have students assume roles for various assignments such as team editor, facilitator, or recorder. Such assignments will place students in interactive roles.
3. The instructor may intervene appropriately in online discussions. Being highly involved early in the course will help to set direction and model, desired behaviors.
4. The instructor must provide clear expectations for the level of participation required from the students.

IV. Quality Matters

Among various standards to assess the quality of online education, Quality Matters (QM) Rubric is one of the most popular ones. QM was started from the consortium in Maryland, which was seeking common standards to maintain similar quality among education given in institutions in the consortium. Quality Matters Rubric standards 2013 consist of eight general standards and 37 specific standards.

General Standard 1: Course Introduction

This standard sets the starting point for students to embark on their online educational journey. Instructions are available to students on how to get started and where to find the elements of the online course. Minimum hardware and software requirements are listed that are necessary to engage the online course.

General Standard 2: Learning Objectives

In the second general standard, the learning objectives of the online course are outlined. The overall outcomes are broken down into individual unit-level learning

outcomes. These learning outcomes are written in a simple manner in the student’s perspective for clarity.

General Standard 3: Assessment

In the third general standard, the assessments are defined that will be used to evaluate the student learning outcomes described in the second standard. Different types of assessment are assigned for measuring student learning and these assessments are aligned with the course content, activities and resources. Students must have multiple opportunities to measure their learning in the course.

General Standard 4: Instructional Materials

This standard specifies that the required instructional materials are listed that will contribute to the achievement of course-level and unit-level learning objectives. The content of the instructional materials should have adequate breadth and depth for the student to learn the essential concepts of the course. The link between the instructional materials and learning activities is explained to the learners.

General Standard 5: Learner Interaction and Engagement

This standard outlines the learning activities that will help the achievement of the learning objectives of the course. The course contents are provided in a manner that students are able to manage their own learning process. There should be opportunities for engagement in student-to-student interaction as well as student to instructor interaction.

General Standard 6: Course Technology

This standard emphasizes on the tools and media that will support the learning objectives. There needs to be a clear alignment between course activities and the learning objectives. The selected tools and media facilitate the student engagement and guide the student to be an active learner. Clear instructions need to be provided on how to access the online resources.

General Standard 7: Learner and Instructor Support

This standard specifies that technical support be given for students and instructors. Students are offered additional directions in mastering the course material. Instructors are also given assistance in delivering an effective course.

General Standard 8: Accessibility

This standard focuses on providing accessibility to all students. The course design should support the use of assistive technologies. The course contents should be provided in a clear manner and are also available in more than one form.

V. Applying the QM Rubric to Principles of MIS Course

In this section, we will provide the course design of the Principles of Management Information Systems course for online delivery following the QM rubric standards.

General Standard 1: Course Introduction

The description for this course is given as: Introduction to the development, selection, use, and impact of information and communication technologies and systems in modern organizations and enterprises.

General Standard 2: Learning Objectives

Upon completion of this online course, students will achieve these course objectives:

- Describe the role of computer-based information system in making decision and in improving efficiency and effectiveness and for the entire organization.
- Discuss the role of information in organizational processes and evaluate current information technologies.
- Apply the concepts and techniques for assessing the information needs of an organization
- Investigate the processes of analyzing, designing, and implementing the information systems that satisfy these needs.
- Assess the role of the manager/user in the design, development and implementation of appropriate information systems and information technology in the organization.

General Standard 3: Assessment

Assessment will comprise of exams, online class discussion, journal review paper, individual project and assignments.

General Standard 4: Instructional Materials

Instructional Materials will include the textbook, journal article, class slides, exam review and online resources.

General Standard 5: Learner Interaction & Engagement

Students will attend the class and listen to class lecture, view the PowerPoint and participate in class discussion, post in online discussion board, review the journal article, read the individual project guidelines, and read the assignment instructions.

General Standard 6: Course Technology

The blackboard system will be utilized for online course delivery. Course navigation is arranged in a linear manner. After three chapters, there are one exam and one assignment. Students are needed to access the PowerPoint slides for each chapter. All the exams and assignments are listed at the beginning of the semester in the order they are due. Course guidelines are posted that tells students what they have to do in class – read the slides, take the assignments and exams, do the individual project and post in online discussion threads.

General Standard 7: Learner and Instructor Support

The contact information of University IT help desk email and phone number are provided to students. Faculty can also contact the University IT help desk for technical problems and support.

General Standard 8: Accessibility

Students are provided multiple means of representation through text, audio, and video. All the course content is displayed clearly in readable font sizes.

VI. Results from Evaluations

Student evaluations survey were administered using the university’s online evaluation system. Students were informed that their evaluations were anonymous. Prior to the survey, the students were informed that a compilation of all evaluations for each course would be reviewed by the college of business dean and then made available to the instructor after the grades for the course had been submitted as part of the course improvement process. To improve the response rate, multiple email reminders were sent to the students to respond the evaluation survey. Data from Fall 2015 (N=45) and Spring 2016 (N=49) are presented to show the results from the student evaluations before and after the redesign of the course. The course was redesigned using the QM rubrics and adopted in Spring 2016. As you can clearly see from Table 3, the student evaluation results have improved from Fall 2014 to Spring 2016. The instrument was measured in the scale of 1 for low and 5 for high. The overall evaluation was 2.08 for the Fall 2015 and 1.36 for the Spring 2016 which is a great improvement. The scale for overall evaluation is 1 (high) to 5 (low). The student GPA for Fall 2015 is 2.91 and for the Spring 2015 is 3.24 which is also quite an improvement. These results provide some evidence that the redesign of the course has positive outcomes.

Table 3: Comparison Table between Fall 2015 and Spring 2016

		Fall 2015		Spring 2016	
		S.D.	Mean	S.D.	Mean
Q1	The instructor followed his/her syllabus.	.50	4.4	.46	4.7
Q2	The instructor gave clear explanations to clarify concepts.	1.10	3.9	.50	4.5
Q3	The instructor was supportive in academic situations.	1.10	3.9	.50	4.5
Q4	The instructor showed enthusiasm when teaching.	1.15	3.7	.66	4.4
Q5	The instructor informed students of their progress.	.50	4.5	.46	4.7
Q6	The instructor's use of examples helped to get points across in class.	1.10	3.9	.66	4.4
Q7	The instructor adequately	.47	4.3	.40	4.8

	explained the grading scale.				
Q8	I believe that I learned in this class.	1.13	3.8	.46	4.7
Q9	The instructor treated me fairly.	.47	4.3	.40	4.8
Q10	The objectives of the course were well explained.	1.13	3.8	.49	4.6
Q11	The instructor was enthusiastic about the course material.	1.13	3.8	.68	4.4
Q12	The instructor encouraged students to ask questions.	1.13	3.8	.50	4.5
Q13	The instructor provided me with an effective array of challenges.	1.17	3.9	.50	4.5
Q14	The course was well organized.	1.10	3.9	.46	4.7
Q15	The instructor carefully answered questions raised by students.	1.17	3.9	.50	4.5
Q16	This course challenged me intellectually.	1.10	3.9	.50	4.5
Q17	The instructor treated students with respect.	1.13	3.8	.50	4.5
Q18	The instructor presented material in a clear manner.	1.17	3.9	.50	4.6
Q19	I have become more competent in this area because of this course.	1.10	3.9	.50	4.5
Q20	The instructor used class time well.	1.13	3.8	.50	4.5
Q21	The instructor seemed genuinely interested in wanting me to learn.	1.15	3.7	.50	4.5
Q22	I would recommend this instructor to other students.	1.13	3.8	.46	4.7

VII. Conclusion

As there is growth in online education along with criticism for lower quality of online courses when compared to traditional in-class courses, we must take steps to improve the quality of online education. In this paper, we have shown the course design of principles of management information course using the QM standards. The author has found the use of QM standards in online MIS principles course is very useful and has witnessed a higher rate of satisfaction for students as reflected in student evaluations. Student performance also showed improvements as shown by the average grade in the class. Future studies can study the critical success factors for student learning in online education; assess quality of learning in online versus offline teaching; conduct empirical studies to compare the course quality using QM standards and other existing standards etc. Online education is only going to grow, however, to assure the students are getting quality education as compared to in-class course, there has to be initiatives for continuous improvement, one of such initiatives is the adoption of quality standards. Otherwise, students will feel

that they are getting a low quality education in bargain for not leaving the comfort of their homes.

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