# Progressing Online Teaching at the University by Assessing Online Courses

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Online learning has been expanding on many university campuses throughout the United States as well as worldwide, but the quality of such education needs to be assessed as compared to on-ground (in the classroom) education. To continue growth and experience in e-learning, universities are encouraged to develop online graduate and undergraduate courses and specialized certificate programs. A large comprehensive state university in New England, Central Connecticut State University (CCSU), created a task force committee to look closely at the university's online and hybrid courses to ensure that the university delivers high quality online and hybrid instruction. Comprised of educators, administrators and technology experts, the task force's objective is to develop recommendations to ensure that 1) online and hybrid courses taught at this state university reflect the best practices for online course design, 2) faculty teaching online and hybrid courses reflect the best pedagogical practices for online instruction, and 3) online and hybrid courses taught provide a positive learning experience for students. The purpose of this study is to explore the educational experience in the online classes offered to the primarily on-ground students, to evaluate the instructional effectiveness of various instructional tools used in the online class, and to assess viability of online course offering across majors, from technical (e.g., engineering and construction management) to humanity (e.g., communication and sociology). A survey was given to students who took online courses at CCSU during the Summer 2014 sessions to assess the instructional tools used and their effectiveness among other pertinent variables. The total number of academic departments that offered online courses was 38 and the total number of responders was 249 students. This paper, based on this survey and continuous discussion with faculty and administration, will recommend action items to maintain and improve online education by applying best teaching practices. This study will serve as a benchmark to continually monitor the progress of quality online education as the recommendations are implemented. Moreover, quality of online courses as compared to on-ground courses will be studied comparing the rigor and quality of the instruction. As in many other areas, a mixed strategy based on an appropriate combination of on-ground and online is desirable. The challenge is to determine that "mix" and support its multiple components. Implementation should include significant, ongoing training of faculty and investment in service and support for students and faculty.

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## Introduction

With the proliferation of distance education, there has been a paradigm shift in higher education over the past two decades. Academic institutions have offered online courses for students through various Learning Management Systems (LMS) and are still trying to expand online learning offerings. However, regulators and accrediting bodies have raised some concerns about online education, compared to on-ground face-to-face education. One of the biggest concerns resides in the quality of online instructions. There have been several attempts to define the quality standards that have been proposed for the delivery of online instructions [1,2,3,4,5,6]. Criteria for quality assurance vary across the various areas of majors, ranging from technical (e.g., engineering and construction management) to humanity (e.g., communication and sociology) [3]. Different programs in higher education offering online courses might have their own unique perspective and interpretation to define the quality of online education [7]. Nonetheless, there is common ground to establish general characteristics for quality online instructions (e.g., clear statements of educational goals, instructional commitment to support learners, and collaborative processes of discovery).

It might be difficult to define the quality of online teaching and learning because "quality" inclines to be measured based on a relative experience or an individual's level of expectation. To assure the quality of distance education in the United States, the Western Cooperative for Educational Telecommunications (WCET) initially drafted and published, in 1995, principles of good practice for electronically offered

academic degree and certificate programs [8]. To support the principles prepared by the WCET, the eight regional accrediting commissions developed a statement of commitment for the evaluation of electronically offered degrees and certificate programs [9]. Both of these two documents together propose a consistent framework for developing quality standards of online education.

## Assessment of Quality Online Instructions

Academic institutions have traditionally achieved quality in intellectual endeavors through the professionalism of academics, the principles of scholarship, and the rigors of peer review. Quinn [10] argues that the roles of post-secondary institutions became increasingly vulnerable with the advent of the Information Age. For instance, faculty as well as students needs to be more open and to promote capacities to analyze, interrelate, and communicate about facts gleaned from the Internet.

The quality in on-ground face-to-face instructions can be measured by "seat time", "qualifications of instructors", "intellectual property", and "satisfaction rating by students". However, the quality in online instructions might need to be measured differently. For instance, "seat time" which is one of the most common quality measures for on-ground face-to-face instructions may not be possible to be used for online or blended instructions. Compared to on-ground face-to-face instructions, there might be a separation of teaching and learning in online instructions. Therefore, the roles of faculty who teaches online courses must be shifted from a didactic teacher to a mentor or facilitator. This paradigm shift requires new quality measures for online instructions, which must be focused on learners, not on the instructor. Pond [11] claims the traditional quality measures do not match this new climate of teaching and learning. The new paradigm measures for quality assurance need to focus on the characteristics in Figure 1.

| Traditional Paradigms Measures | vs. | New Paradigms Measures |
|---|---|---|
| Teacher-Centered | ↔ | Leaner-Centered |
| Centralized | ↔ | Local |
| Hegemonic | ↔ | Deferential |
| One Fits All | ↔ | Tailored |
| Closed | ↔ | Open |
| Us versus Them | ↔ | Collaborative |
| Prescriptive | ↔ | Flexible |
| Time as Constant/Learning as Variable | ↔ | Learning as Constant/Time as Variable |
| Teacher Credentials | ↔ | Teacher Skills |
| Consolidated Experience | ↔ | Aggregated Experience |
| Static | ↔ | Dynamic |

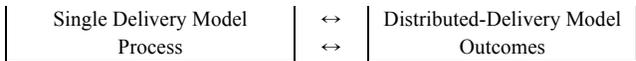| Single Delivery Model Process | ↔ ↔ | Distributed-Delivery Model Outcomes |
|---|---|---|

Figure 1. Traditional vs. New Paradigm Measures for Quality Online Education [8]

Since the technological transformation in higher education, there has been lack of measures to address the fundamental integrity of the online learning environment. This results in lack of acceptance of online degrees by potential employers [12]. In addition, only a few faculty members accept the value and legitimacy of online education [13]. To address this issue on academic integrity in online education, the WCET developed, in 2009, a statement of best practice strategies to promote academic integrity in online education. The statement is organized into five discrete sections: institutional context and commitment, curriculum and instruction, faculty support, student support, and assessment and evaluation [14].

The Council of Regional Accrediting Commissions has developed the interregional guidelines for the evaluation of distance education to provide an assessment framework for institutions either planning or already involved in online education. The guidelines consist of nine criteria of quality for online education as follows [15]:
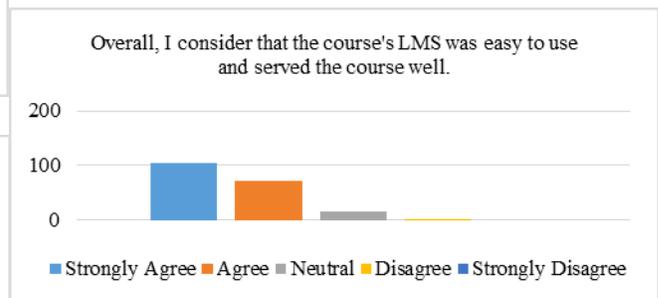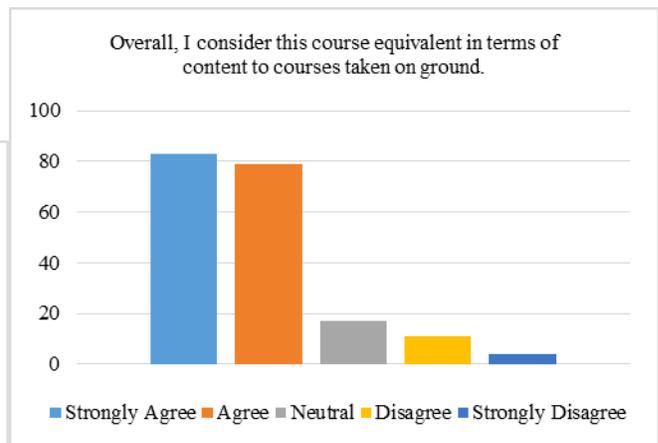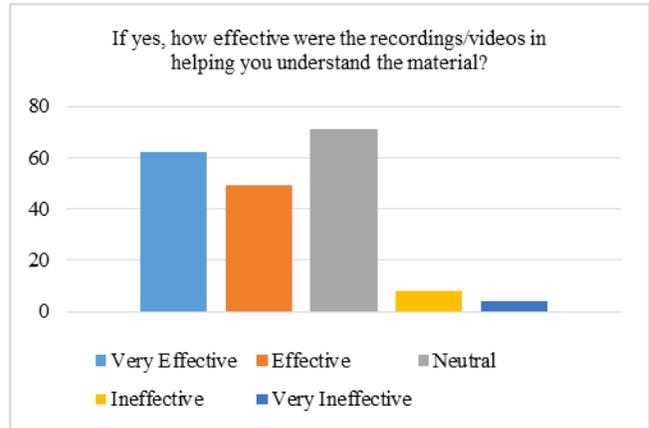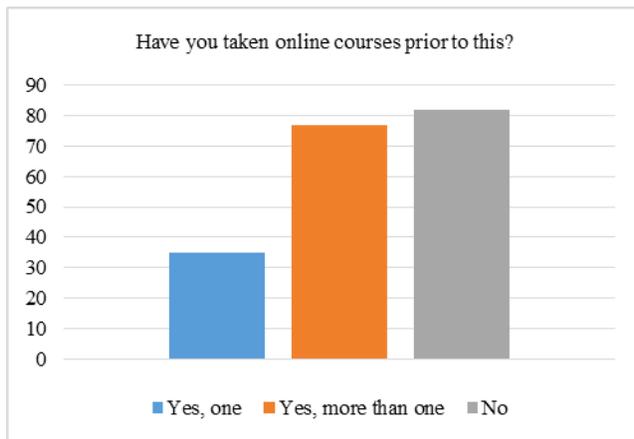
- Appropriateness to the institution's mission and purposes.
- Integration of the institution's plans for developing, sustaining, and, if appropriate, expanding online offerings and its regular planning and evaluation processes.
- Incorporation of online learning into the institution's systems of governance and academic oversight.
- Coherence, cohesiveness, and comparability of curricula for the institution's online learning offerings in academic rigor, as compared to programs offered in traditional instructional formats.
- Institutional evaluations of the effectiveness of its online offerings, including the extent to which the online learning goals are achieved, and use of the results of its evaluations to enhance the attainment of the goals.
- Appropriately qualified and effectively supported faculty responsibility for delivering online learning curricula and evaluating the students' success in achieving the online learning goals.
- Institutional provision of effective student and academic services to support students enrolled in online learning offerings.

- Institutional provision of sufficient resources to support and, if appropriate, expand its online learning offerings.
- Institutional assurance of the integrity of its online learning offerings.

## Student Survey of Online Courses

A survey was given to students who took online courses at CCSU during the Summer 2014 sessions to assess the instructional tools used and their effectiveness among other pertinent variables. The total number of academic departments that offered online courses was 38 and the total number of responders was 249 students. Provided below are samples of the 25 questions asked to evaluate the opinion of the students on their online course experience

**Have you taken online courses prior to this?**

■ Yes, one ■ Yes, more than one ■ No

**Did your course have recordings/videos?**

■ Yes ■ No

**If yes, how effective were the recordings/videos in helping you understand the material?**

■ Very Effective ■ Effective ■ Neutral
■ Ineffective ■ Very Ineffective

**Overall, I consider this course equivalent in terms of content to courses taken on ground.**

■ Strongly Agree ■ Agree ■ Neutral ■ Disagree ■ Strongly Disagree

**Overall, I consider that the course's LMS was easy to use and served the course well.**

■ Strongly Agree ■ Agree ■ Neutral ■ Disagree ■ Strongly Disagree

This paper, based on this survey and continuous discussion with faculty and administration, recommends action items to maintain and improve online education by applying best teaching practices.

## Proposed Recommendations for Enhancing Online and Hybrid Instruction

The paper contains recommendations to ensure that CCSU delivers high-quality online and hybrid instruction and demonstrates the effectiveness of its technologically-mediated instruction. The Task Force

considered the following questions in developing its recommendations:

*Question 1:* What are the definitions for on-ground, hybrid, online courses, and what is the strategy for online and hybrid?

*Recommendation 1a:* The Task Force recommends clear definitions of online course section, online-hybrid course section, on-ground-hybrid course and eLearning programs:

a) An online course section is an e-Learning section of an existing course in which 100% of the class contact hours are conducted via the internet. The instructor for such a section shall provide all content via course management systems approved by the offering department and/or program, and University.

b) An online-hybrid course section is an e-Learning section of an existing course that combines on-ground and online sessions. An online-hybrid course section substitutes greater than 50% but less than 75% of on-ground contact hours with online contact hours. Online-hybrid courses are classified as "online courses."

c) An on-ground-hybrid course is a section of an existing course that combines on-ground and online sessions with 50% or less of contact hours occurring online. On-ground-hybrid courses are not classified as "online courses."

d) E-Learning programs are degree, certificate, major programs in which 50% or more of the course work in the program is available for students to take online.



Online Percentage Range
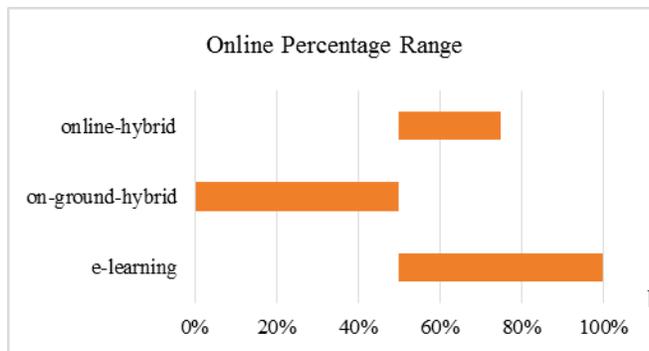
*Recommendation 1b:* The Task Force recommends that a) courses be properly labeled in the catalog, 2) limitations be continued and be placed on the number of online and online-hybrid courses during Fall and Spring sessions, and 3) that a process to enforce adherence to policies be developed.

*Recommendation 1c:* The Task Force recommends the adoption of the following strategy guidelines for online and hybrid courses.

a) Online Courses; The online platform should accommodate student needs first and seems best suited for:

*Summer session courses* – Online courses would advance students' progress towards graduation, eliminate the barrier of commuting to campus (thus reducing students' cost of travel and their carbon footprints), and make it easier for students to accommodate other activities, such as working full-time during the summer, by allowing them to take advantage of the asynchronous nature of many online courses. These courses would also offer faculty additional compensation, while providing the university with additional tuition.

*Graduate courses* – Online courses would be more accessible to students working full-time, students who have to travel, and students' other responsibilities.

*Winter session courses* – Online courses during the Winter session provide flexibility to students who travel home during the break. Additionally, these courses will not be disrupted by weather conditions. The Task Force does not endorse offering a course for the *first time* during the Winter session due to the length of the session and the challenge of holiday interruptions.

*Fall and Spring session courses* - Should the number of proposed sections exceed the limitation, priority should be given first to courses where the content of the course is already substantially online (e.g, online searching in library sciences, online course development in education). Second priority should be given to accommodate student-specific needs (e.g., courses targeting students involved in full-time internships).

b) Hybrid Courses; Our hybrid platform focus should be:

- "3+1" courses - 4 credit courses where 3 credits are offered on ground with a 1-credit "between class" online component.
- Courses where the online component is synchronous, or broken into small groups meeting synchronously, allowing students to express themselves online.
- Courses where the online component is asynchronous should provide a justification

and design based on course content for the substitution of online for on-ground sessions.

*Recommendation 1d:* The Task Force recommends the following procedures for development and introduction of online and hybrid Courses:

a) Online courses must be generated by the faculty and approved by the offering department or program.

b) Faculty who wish to offer online and primarily online hybrid courses must work with Instructional Design and Technology Resource Center to develop online content, gain an understanding of the university's standards and mechanisms for course delivery.

c) Online courses from sources external to the university (e.g., MOOCs, Kahn Academy) cannot be offered as credit bearing courses.

d) Creation of administrator responsible for coordinating, collecting data and reporting on online and hybrid courses.

e) Creation of a faculty body (to be determined, possibly Academic Standards or Curriculum Committee) to work with the administrator and ensure faculty control of curriculum content and delivery method. The faculty body will be responsible for initial approval of online and hybrid proposals after the department has approved the course proposal.

f) A faculty member cannot be required to offer a course online, except if online teaching was a criterion for hiring.

g) Creation of a website to facilitate faculty advancement of the standards and tools including checklists, timeline, approval signatures etc.

*Question 2:* How can we ensure that online and hybrid courses taught at the university reflect the best practices for online and hybrid course design?

*Recommendation 2:* The Task Force recommends adopting the Quality Matters Higher Education Rubric for online and hybrid course design as outlined below. Ensuring the use of best practices for online and hybrid course design involves adopting standards and communicating such standards to the faculty. The Quality Matters Higher Education Rubric is a set of eight standards used to evaluate online and hybrid course design. In 2003, Quality Matters (QM) was initiated by MarylandOnline, Inc. and has received national recognition for a national benchmark for online course design. QM offers a set of standards, called the QM rubric, for the design of online and blended courses. The rubric consists of 43 specific review standards which can be grouped into eight general standards of course quality. The eight general standards

include (1) course overview and introduction, (2) learning objectives (competencies), (3) assessment and measurement, (4) instructional materials, (5) course activities and learner interaction, (6) course technology, (7) learner support, and (8) accessibility and usability [16].

Quality Matters underlying principles are:
- Continuous: all courses will eventually meet standards,
- Centered: On research, national standards, literature, and instructional design principles,
- Collegial: Faculty-driven, peer review process (diagnostic and collegial),
- Collaborative: The review is flexible and not prescriptive (many ways to meet each Standard).

*Question 3:* How can we ensure that faculty teaching online and hybrid courses at the university reflect the best pedagogical practices for online instruction?

*Recommendation 3:* The Task Force recommends that the Instructional Design and Technology Resource Center (IDTRC) at the university reports directly to Academic Affairs. This move better reflects the alignment of the IDTRC activities related to course design and support of the academic mission. Thus, allowing IDTRC to focus exclusively on student and faculty Instructional design needs. This is consistent with best practices at other peer institutions. It is anticipated that training needs outside of Instructional Design currently provided by IDTRC would need to be reassigned.

We must ensure that faculty receive training before teaching an online or hybrid course. The training may include, but is not limited to, the following areas (1) Course Design, (2) Course Delivery, (3) Course Content (in terms of tools to present the content), (4) Learning Management System, and (5) Institutional Infrastructure (support structure).

*Question 4:* How can we ensure that online and hybrid courses taught at CCSU provide a positive learning experience for our students?

*Recommendation 4:* It is necessary to ensure that faculty design quality courses. In conjunction with the course design, faculty should allocate time for reviewing and testing the course content before a course goes "live". This should ensure that technical problems are eliminated from the course prior to a student interacting with the course materials and activities. The reduction of technical problems from a course ensures that a student has an intellectually stimulating and positive learning experience. Additionally, we know that good course design, coupled with good course delivery,

creates a better learning experience for the students (and better teaching experience for faculty).

As part of the QM course design standard, it is highly recommended that faculty incorporate into their online course design an area for posting communication policies ("Communication Guidelines"). This is the area of an online course where the student can clearly see the professor's communication policies - these include timelines for responding to emails, discussion forum participation, online meetings, and assignment feedback, amongst other policies. In order to support the students and faculty, the institution must provide support in the following areas:

- Institutional Infrastructure: Online tutoring access (academic), Help Desk (technical), Online Library access, registration,
- Orientation to students with regards to "learning online" (Learner Readiness),
- Course Design: planning and forethought support that goes into online courses.

The Task Force, therefore, recommends that the following best practices be adopted:

- A Quality Matters Rubric Standard be put into practice
- A Faculty Website be created to provide specific guidance and information in the area of online and hybrid course development
- A training path be created by IDTRC for faculty looking to teach online or via a hybrid course delivery method
- A student orientation to online courses be created to support the student learners
- A faculty driven review process of online courses (QM standard) be established to drive continuous improvement of our online offerings.

*Question 5:* How can we ensure that students enrolled in online and hybrid courses have an opportunity to provide feedback on the quality of their educational experience in a technologically-mediated course?

*Recommendation 5:* The Task Force recommends the University purchase electronic student evaluation software. An online course evaluation tool must be made available to students and faculty. This tool must ensure that all feedback from students is kept anonymous. Faculty should have access to the feedback in a timely fashion in accordance to contractual obligations. Presently there is ongoing discussion with Information Technology on submitting an RFP to vendors and possible implementation by Fall 2015.

*Question 6:* How can the issue of intellectual property in online and hybrid courses be addressed to serve the rights and interests of both the faculty and the university?

*Recommendation 6:* Online teaching material developed by a single faculty member or a group of faculty members and offered for e-learning shall remain the intellectual property of that faculty member or group of faculty members, including but not limited to indication of authorship, copyright and subsequent publication, subject to a reasonable reuse policy agreed to by the faculty for emergency situations and retirements. Departments may not re-use content developed by faculty, including original organization of non-faculty produced material, without the consent of the faculty who developed that content. Faculty copyright holders may also choose to make their work available under the Creative Commons licensing options that have been available since their development in 2002. Licensing work via Creative Commons offers a level of sharing and collaboration that is more expansive than found in the traditional "All Rights Reserved" model. This may be of interest to some faculty members as it may support collaborative projects. Copyright holders may legally choose a Creative Commons license without losing copyright. Increasingly, however, federally grant-funded projects have within their grant guidelines the requirements that the grantees publish their work under open licenses. There has been consistent affirmation throughout the history of online courses at the institution and the sponsor's executive committee that course content developed by faculty and offered online remains the intellectual property of the faculty. The Sponsor's Executive Committee approved policy document that stated: "The intellectual content of the web-enhanced portion of an on ground course, or the web content of an on-line course, is automatically copyrighted and remains the sole, exclusive and perpetual property of the faculty member(s) who created it.

## Case Study Courses in the Construction Management Field

Courses in the Construction Management program were used as case studies of the progressive implementation of the recommendations discussed.

*Fundamentals of Construction Management*
This course is completely taught online, where it introduces fundamental aspects of construction management to graduate students without formal construction management backgrounds. Topics covered include planning, scheduling, estimating, organizational forms, contracts and risk management. Upon completion of the courses, students would be able to apply the following; estimating techniques, planning

techniques, project management strategies, and field operations strategies.

Online Lectures Modules were provided on video recordings within Blackboard Learn via 'Collaborate'. The lectures covered the outlined topics in the syllabus and solutions to example problems. The slides for each of the presentations were made available, as well as additional material not covered in the video lecture. 'Attendance' was automatically registered when students viewed the lecture videos. Homework was submitted by scanning the solution and uploading to the LMS. Quizzes, on the other hand, where multiple choice questions addressing conceptual knowledge. Online training of scheduling techniques was conducted by providing the appropriate software via the LSM to be installed by the students, and complete examples were provided as guidance to compete the required project accordingly. The students evaluated the course highly specially the online training on scheduling and estimating software.

*Engineering Economics*

This course was also taught completely online to undergraduate students where it provided the fundamental concepts of engineering economics. It introduces students to cost and revenue estimating and cash flow analysis for construction engineering projects. The course provided students with the tools to select between alternatives taking into account the time value of money, depreciation, inflation, income taxes and risk factors. The online delivery of this course was very similar to the Fundamentals of Construction Management course, and the software employed was Excel spreadsheet which proved to be an efficient tool in solving engineering economics problems.

*Applied Structural Systems*

This course was an online-hybrid-course taught specifically to Construction Management students. A portion of the course was taught online, specifically training on structural software use. The course provided an introduction to strength of materials, structural analysis and the structural design process for the construction manager or architect. It included a review of the current structural steel and reinforced concrete design specifications and building code requirements. The courses objectives were for students to understand the different types of loads placed on a structure and how materials react to those loads, be able to analyze the load distribution of structural elements, and be familiar with the fundamental concepts of steel and reinforced concrete design. It's designed mainly for undergraduate students in their senior year. Students highly appreciated the course since it provided practical hands-on experience with structural software.

Interestingly, students whom were working for construction firms at the time of taking the course expressed that it helped them manage their projects more efficiently and that they were able to contribute effectively to discussions with the architect/engineer.

*Construction Estimating*

With a curricular redesign grant program, this course was redesigned to provide a hybrid experience. Face-to-face sessions were held on campus in the classroom. Also, online sessions were a blend of self-paced and group activities. Using Blackboard and Tegrity, some lectures were delivered online. In addition, a Ning class network (a social media tool similar to Twitter and Facebook) was created as a collaboration and communication channel for this class. By facilitating the use of Ning, fundamental shifts in the way students connect and communicate with each other were made to improve student learning. There were 24 students enrolled in this class, and 21 students provided feedback about their own experience using the Ning network. They highlighted, "It actually extended class topics into online discussion.", "It forced me to think about what I am doing.", and "Blogging helped me a lot." Considering this hybrid course experience, it is concluded that student engagement and learning can be enhanced using social media tools.

## Conclusions

The authors believe that it is their duty and privilege to design and provide courses that are challenging, interesting, current, and relevant, this applies equally to the undergraduate and graduate courses at Central Connecticut State University. They have taught extensively in the Construction Management, Economics and Structural Engineering areas, teaching online and on-ground courses. This study serves as a benchmark to continually monitor the progress of quality online education as the recommendations are implemented. Moreover, quality of online courses as compared to on-ground courses will be continuously studied comparing the rigor and quality of the instruction. As in many other areas, a mixed strategy based on an appropriate combination of on-ground and online is desirable. The challenge is to determine that "mix" and support its multiple components. Implementation should include significant, ongoing training of faculty and investment in service and support for students and faculty.

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