

## **The Effectiveness of Teaching-Learning Process in Online Education as Perceived by University Faculty and Instructional Technology Professionals**

**Raghu N. Singh<sup>1</sup> and David C. Hurley<sup>2</sup>**

*Abstract: The major objective of the study reported here is to identify and rank in terms of relative importance selected principles and their means for achieving an effective online education. Research steps employed include (1) conducting a review of relevant literature reporting success as well as challenges online course delivery has been experiencing in the higher education; (2) developing a list of the major principles for online learning (efficacy, student empowerment, and academic integrity) as well as means relevant to achievement of each of those principles based on a review of literature; (3) selecting a sample of faculty members and supporting professional staff involved in online teaching at six university campuses selected through a chain referral technique; (4) interviewing respondents in our sample by using Delphi procedures in two rounds for ranking principles and means; and (5) analyzing data and subjecting them for their reliability and validity implications. The study finds strong academic support in matters of efficacy and student empowerment for online teaching, and identifies some concerns or challenges respondents perceive for achieving and maintaining an adequate integrity of online courses.*

*Keywords: online education, teaching-learning process, identifying three effectiveness evaluation principles (efficacy, student empowerment, and academic integrity), Delphi methodology, reliability, validity*

### **Introduction**

This paper seeks to contribute to the evaluative literature relevant to the online courses in higher education. We focus on opinions and perceptions of faculty and instructional technology professionals to assess what they believe are the potentials, strengths, and limitations for the teaching-learning process in online courses. The study reported here was initially targeted at identifying selected evaluative principles in our own department's teaching of graduate online criminology program. However, the scope of this goal was later expanded to identify ubiquitous principles and means for evaluating the online teaching-learning process in general.

### *Expected Contribution*

The research reported in this paper attempts to assess ways for evaluating the future prospects of the online education. As the efficacy of online education continues to grow, assessments of this pedagogical modality become increasingly important. While the issues of online education are

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<sup>1</sup> Department of Sociology & Criminal Justice, Texas A&M University – Commerce, Raghu.Singh@tamuc.edu

<sup>2</sup> Department of Sociology & Criminal Justice, Texas A&M University – Commerce, David.Hurley@tamuc.edu

both complex and multi-dimensional, even small scale research efforts can prove beneficial in adding to the knowledge base. Each empirical study adds to both literature and discussion with the goal of enhancing the future scope of the online education programs in the U. S. and beyond.

Online teaching has its critics. Brooks (1997) is quite blunt in saying that “the support for multimedia learning styles is much weaker than many think it is...” (p. X). Although opinions may have changed during the past few years, there still may be a prevalence of negative stereotypes or labels about online teaching (see Heines, 2005, pp.145-150). Shank & Sitze (2004) state that online learning lacks physical cues, has technology and access hurdles, and favors those who communicate well in writing (p. 11). Others note that integrity issues pose a major concern for online teaching (Gallant, 2015; Michaels and Williams, 2013; and Roberts and Hai-Jew 2009).

A major assumption is that ‘online courses are either inferior in quality or are not comparable to face-to-face courses for student learning’ (Sussman and Dutter, 2013). Yet, this assumption has not been conclusively proven. However, a significant amount of research is needed to establish the importance of online education in comparison to, and even in supplement to, face-to-face or other traditional modes of teaching-learning (Jaggers and Bailey, 2010). Online education is after all a significant phenomenon in contemporary higher education. Blumenstyk (2015) stresses that “distance education, most of which occurs online, is a growing piece of the higher-education landscape” (p. 144). Additional efforts are needed to compare and contrast the relative merits of various modes of delivery in education instead of labeling any one of them as inferior or superior. There is a need to develop a constructive outlook for the online education instead of simplistic searches for barriers or challenges that discourage innovation for alternative teaching-learning methods (cf. Muilenburg & Zane, 2007).

While potential issues in online teaching have been well documented, there is a need to balance negative types of concerns against the potential merits online education has for the teaching as well as learning prospects. Online education can enhance communication between faculty and students; is financially viable and cost effective; and has flexibility, convenience, and accessibility by both time and place. Moreover, new opportunities are available to students for open and critical online discussions without feeling intimidated. The technology also increases possibilities for instructors by allowing the posting of videos of their own lectures as well as other legally available online materials (see, for example, Bartley & Golek, 2004; Palloff & Pratt, 2007; and Shank & Sitze, 2004). In addition, Degago & Kaino (2015), Powers, Turner, Westwood, Matuszewski, & Wilson (2001), and Stevens (2015) illustrate how online teaching has potential for enhancing the scope of student engagement or involvement in the learning process by making them interact through discussion boards instead of sitting passively in the classroom. Moreover, Bergman & Sams (2012) note that there are some advantages to online teaching such as the fact that “flipping” the classroom to an online mode “ensures students receive a personalized education tailored to their individual needs” (p. 6).

To improve the effectiveness of the methodology of online teaching, an objective review of both the potential merits as well as drawbacks of the online education is required. Without this continuing focus on assessment, the online teaching-learning paradigm will likely happen in a vacuum -- without knowing which improvements are effective and which are not (see, for example, Bergman & Sams, 2012; Blumenstyk, 2015; Mann, 2000; Muilenburg & Zane, 2007; Palloff & Pratt, 2007; Shank & Sitze, 2004; and Tallent-Runnels, Thomas, Lan, & Cooper, 2006). To understand concepts relevant to online teaching, this study proposes a framework to examine the value of online education. Our goal is to explore both potential advantages and drawbacks of online teaching as seen by professionals through a systematic and structured methodology.

### *Identifying Principles Involved in Online Education*

For the purposes of this study, the effectiveness of online education was interpreted through a social-psychological perspective, i.e. in terms of people's perceptions or interpretations of how they experience its reality (see Mead, 1934). To systematically explore the effectiveness of online education, we developed a framework of three conceptually inter-related evaluative principles based on a review of literature and theoretical relevance (see Weber's typology construction, 1949). Principles relevant to online education are described below.

*Efficacy of Online Education.* For maintaining its survival as well as viability in the future, the teaching-learning process in online education must continue to gain momentum as well as credibility. It is likely for it to have a bright future along with a continuously increasing innovation in the field of technology. The efficacy of online education will require rigorous emphasis on quality of both teaching and learning. The efficacy of the online education may be accomplished through the following:

- Implement a curriculum development and innovation strategies based on short term as well as long range planning (including sequencing and course rotations for the benefit of student advisement;
- Have the institutions of higher education critically assess and address negative stereotypes and labels used by some questioning the potential online courses have;
- Make serious efforts to ensuring that viabilities of online courses are comparable to those of traditional classroom courses in terms of expectations and requirements;
- Conduct continual periodic and comprehensive assessments of online courses based on accessibility and rigor for maintaining their image and marketability (that is important particularly for new online degree programs in reference to a desired growth); and
- Make sure that institutions of higher education actually provide incentives, appropriate training, and technology support and resources to the faculty members teaching online courses.

*Student Empowerment.* The ability of online faculty to empower the students is an important element for the success of online education. This may ensure that students are not 'passive' or 'disengaged' with their education but are actively involved in learning that includes a significant degree of empowerment and accountability based on a responsible role in the completion of degree requirements. Active involvement also refers to faculty actions motivating and facilitating student interaction. Examples of student engagement are:

- Students are committed to own learning as well as following course objectives;
- Faculty do provide means to students for enhancing their autonomy as well as dedication to course discussions through collaborative online interactions and team work ;
- Students focus on completing degree requirements rather than pursuing multiple unrelated goals or tasks;
- Empower students to develop skills such as critical thinking and creativity while completing their education; and
- Encourage students to evaluate teaching and learning objectively and meaningfully.

*Academic Integrity.* Online teaching and learning have to achieve creditability by maintaining rigorous standards of faculty expertise, course delivery, and student assessment despite possible challenges and obstacles in achieving those outcomes. Academic integrity may be enhanced through the following:

- Maintain and follow credible or established principles of professional ethics;
- Chart and follow rules and criteria of accountability; and
- Avoid focusing on integrity issues *only* based on negative conducts (such as cheating and plagiarism) managed through punitive actions alone, making sure that students are rewarded and motivated for understanding and maintaining ethical conducts.

## **Methodology Used**

### *Phase I of Data Collection*

We identified the principles and criteria for evaluating online education by conducting a review of directly relevant books and research papers published on topics on the subject. Among several possible principles selected through that review, we narrowed and classified these principles into three categories described earlier in the paper. Some other principles implied in the literature were either overlapping these three or did not seem to be distinct or significant from a conceptual standpoint. The review of literature also helped with the selection of bases for evaluating online courses as well as to identify various means for achieving them.

Based on our review of literature, a total of 70 items (32 bases and 38 means for evaluating the three principles) were identified.

### *Phase II of Data Collection*

We employed the Delphi methodology to assess the bases and means for achieving the three principles of online education. The Delphi approach has been used in social sciences research concerning several kinds of problems; but is best known as a tool for planning and forecasting. It has proved to be a valuable technique for developing typologies and characteristics of various phenomena (see Singh & Webb, 1979).

A number of scholars have discussed the merits of the Delphi approach. We are summarizing a few of them below:

- (1) The Delphi approach relies on the rationality of group judgment, or "n-heads are better than one." It is a process of eliciting and refining the opinions of a group of individuals. The individuals remain anonymous to each other; their opinions are continually refined and reiterated; and feedback to participants is privatized and controlled.
- (2) The Delphi approach is a variant of the panel or committee approach for arriving at a consensus of majority opinions. Its design eliminates or prevents face-to-face confrontation, specious persuasion, and the bandwagon effect of a majority agreement. It replaces direct discussion with a series of carefully controlled questionnaires that report back edited and new information to the participants, where they act in privacy and react to the successive inputs.
- (3) The Delphi approach uses some form of statistical index as a representative of the group opinion. Thus, there is no particular attempt to arrive at unanimity among the respondents, and a spread of opinions on the final round is the normal outcome.
- (4) The Delphi approach is very useful in such areas as exploring the development of

typologies and components of concepts that will eventually lead to additional research for their further testing and verification. This 'intuitive technique' utilizes the knowledge of experts in a particular area of concern for at least making a beginning in issues needing attention. The Delphi approach provides flexibility for the research in various ways. There is no 'cut and dried' set of steps to follow and it provides variations of possibilities during each phase of inquiry. The Delphi procedures in the study reported here were aimed at developing a list of evaluative principles of online education consisted of the following procedures and data sources.

The Delphi procedures for developing a list of online teaching principles and their elements such as means consisted of the following steps.

*Selection of Respondents.* We selected respondents for ranking bases as well as means of all three principles through a non-random sampling procedure called 'chain-referral' or 'snowball' technique. To do that, we first travelled to each of the six universities situated within 80 miles radius of our own campus and first met with professional officials of the instructional technology staff and interviewed them for ranking principles and means. With their help, we selected faculty members teaching online courses on each university campus for our interviews.

*Interviewing Respondents.* In a face-to-face interview of each respondent, we handed 3" x 5" cards, each containing a basis and means that had been identified through a review of literature for each of the three principles. Each respondent was asked to rank anonymously all elements stated therein in terms of relative importance (each on a Likert scale from most important to unimportant).

*Data Analysis.* We statistically analyzed responses from the first round of interviews to determine the degree of consensus among respondents on ranking elements of each evaluative principle. Then, in a second round, we provided respondents with their average responses (mean, standard deviation, and interquartile range) to enable them to finalize their assessments, if needed. The standard deviation on an item represented a degree of consensus among respondents, while a mean response on the scale provided an indicator of the degree of an item's importance in relation to other items.

## Research Findings

We provided earlier in the paper our initial conceptualization of three major principles of 'effective' online teaching, along with various bases for their evaluation and suitable means for each as indicated in Table 1. The principles and their component elements were listed and ranked by respondents along with the means for achieving each goal.

**Table 1: Rank order the three major principles of teaching online courses**

Principles of Effective Online Teaching	Bases for Evaluating Each Principle	Means for Achieving Each Principle's Bases & Goals
I. Efficacy of Online Teaching-Learning	<ol style="list-style-type: none"> <li>1. Implementation of strategies for marketing online teaching-learning</li> <li>2. Maintaining clarity of program and course objectives</li> <li>3. Commitment of university in supporting the program</li> <li>4. Quality of learning environment in courses</li> <li>5. Maintaining academic standards for</li> </ol>	<ol style="list-style-type: none"> <li>1. Conduct research continually on feasibility and viability of the online teaching program</li> <li>2. Comparing teaching programs with ones offered by other colleges</li> <li>3. Develop credulous and comprehensive plan for offering online courses with a long-range focus</li> </ol>

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Principles of Effective Online Teaching	Bases for Evaluating Each Principle	Means for Achieving Each Principle's Bases & Goals
	recruiting students 6. Whether courses offered are based on a well-planned sequence & rotation 7. Whether fair and clear grading policies used in courses 8. Whether course designed with flexibility & adequate details for learning	4. Availability of qualified and committed faculty 5. Provision of adequate resources for student learning and development 6. Adequacy of prep time and training used by faculty 7. Clear policies for dealing with cheating/plagiarism, and student disability 8. A result oriented rather than an ideological outlook
II. Student Empowerment	1. Providing students a collaborative and team-like community environment for learning 2. Clear and detailed statements in course syllabi for expectations and requirements to maximize student learning 3. Insuring a fair, credible, objective, and equitable system of grading and evaluating student performance 4. Making sure students have access to a grievance process 5. Enhance student autonomy and independence, not needing spoon feeding 6. Maintaining supportive system for retaining and guiding students for success 7. Keeping student needs in mind while planning curricula	1. Recruitment and retention strategies used for students 2. Advising/guiding students for success 3. Providing encouragement and avenues for interaction among students (for example, requiring students to post comments on each other's views in online discussions) 4. Increase effective and open communication with students 5. Providing opportunities for students to inculcate responsibility and self-discipline 6. Providing students avenues for seeking their feedback (for example, through surveys) 7. Avoiding arbitrary changes in course requirements during middle of the term.

**Table 1: Rank order the three major principles of teaching online courses**

Principles of Effective Online Teaching	Bases for Evaluating Each Principle	Means for Achieving Each Principle's Bases & Goals
III. Academic Integrity	<ol style="list-style-type: none"> <li>1. Quality of communication in course syllabi by illustrating in details all procedures and requirements</li> <li>2. Record of credibility of faculty qualifications and skills for teaching online courses</li> <li>3. Providing skilled and reliable professional staff to monitor and provide technological advancement</li> <li>4. Maintain high standards and accountability for faculty (for example, by facilitating and rewarding scholarly accomplishments)</li> <li>5. Developing and facilitating web course management and continuous improvement strategies</li> <li>6. Provide multiple technological options and resources for teaching-learning</li> <li>7. Offering well planned holistic curriculum for complete online degree programs rather than piecemeal courses</li> </ol>	<ol style="list-style-type: none"> <li>1. Taking course evaluation based on multiple methods seriously</li> <li>2. Building data on the history of evaluation of online courses</li> <li>3. Opportunities for training faculty for succeeding in the program</li> <li>4. Being explicit, consistent, fair, and equitable in grading policies (for example, using well defined grading rubrics) for effective learning</li> <li>5. Well planned learning outcome assessment in courses</li> <li>6. Continual assessment of academic programs and courses for enhancing their adaptability</li> <li>7. Using past evaluations for revising curricular programs</li> <li>8. Monitor and enforce policies for managing plagiarism and academic dishonesty</li> </ol>

### *Assessing Reliability of Data*

Scale communality and factor loadings are given in Table 2. The means, standard deviations, and Cronbach's alpha for the three sub-scales are shown in table 3. Total scores range from 0 to 44 in the Efficacy subscale, 0 to 67 in the Empowerment subscale, and 0 to 29 in the Integrity subscale. The means, standard deviations, and values of coefficient alpha for the subscales support the reliability of each of the subscales. Support for internal consistency among items in each of the subscales as well as between each subscale and the overall assertiveness scale is also indicated by the first three columns in Table 3. Data show that efficacy principle overall is the best predictor of assessing effectiveness of the online education, although both student empowerment and academic integrity are also significantly related to that as well. Overall, a relatively high internal consistency among indicators demonstrates reliability of the online principles scale.

**Table 2: Scale Communality and Subscale Factor Loadings of Principles of Online Education**

Principles and Criteria for Evaluation			
Criteria	Efficacy	Student Empowerment	Integrity
1	.625	.411	.441
2	.513	.349	.326

3	.459	.531	.277
4	.610	.642	.331
5	.342	.852	.298
6	.784	.775	.563
7	.683	.641	.492
8	.589	-	-

Kaiser-Meyer-Olkin Measure of Sampling Adequacy: .687

Bartlett Test of Sphericity: 2874.674,  $P < .001$ .

**Table 3: Descriptive Statistics and Reliability Coefficients for Subscales**

Subscale	No. of items	Mean	Standard. Deviance	Alpha
Efficacy	8	11.2	4.5	.850
Student Empowerment	7	8.1	3.7	.744
Integrity	7	5.61	5.6	.769

### *Assessing Validity of Data*

A partial demonstration of the validity of three subscales based on various evaluative principles was accomplished through procedures of construct validation. Support for internal consistency among items is indicated by data in Table 4, which show inter-correlations between these factor-analysis derived subscales. As indicated in the table, inter-correlations between three of the sub scales were quite strong implying a reasonable degree of construct validity.

**Table 4: Inter-correlations Among Subscales Indicating Validity**

Subscale	I	II	III
I. Efficacy	-	.5532	.6571
II. Student Empowerment	-	-	.6128
III. Academic Integrity	-	-	-

Note: All Correlations  $p < .001$

### **Discussion**

The primary objective of this exploratory study is an attempt to begin to identify select principles of the effectiveness of online education. First the principles were identified through an extensive



review of literature and secondary data on the subject. Then, with the help of a sample of faculty members and instructional technology professional staff (assumed to be ‘experts’ for the purpose), we ranked various components of those principles. We believe that it is meaningful to find that efficacy of online courses is ranked to be the most important followed by student empowerment. Overall, the respondents appear to be ambivalent about the state of affairs with regard to the academic integrity of online courses, probably implying a need to further address and make improvements in carefully identifying the extent and sources of cheating and plagiarism in online assignments and examinations. Several of our respondents recommend needs for improving technology and other resources for addressing those challenges.

We find the three subscales of those principles as conceptually relevant to online education. Of course, they may need to be retested in other empirical studies, hopefully based on relatively larger random samples of respondents, before gaining additional credibility.

We believe that identifying selected ideal principles based on concepts relevant to effective online teaching-learning, may be seen as our meaningful effort in the field. Our limited effort does address a complex topic inherently plagued by disagreements, philosophical controversies, and a general lack of research. Our identification of multiple bases and means for achieving effective online education may be useful for teachers and online support administrators in efforts needed for enhancing its scope into the future. Continued and more systematic research than in the past is needed on online teaching as well as learning to assess outcomes and characteristics as well as institutional support system related to effective course design and delivery.

A significant number of our respondents suggest that the institutions of higher education need to plan and improve curricula for offering online courses for addressing students’ needs and rational appraisals of all courses rather than ideas of those faculty alone who volunteer to teach online courses. In addition, it is recommended by some that academic departments offering online courses should have faculty committees regularly evaluating and planning them for achieving desirable outcomes. We find many of our respondents expressing optimism in predicting an improved quality as well as quantity of online course offerings into the future.

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