

DEVELOPMENT OF AN EFFECTIVE ONLINE TEACHING ABILITY FOR PROFESSIONAL SCIENCE TEACHERS

Dr. (Mrs) C. E. Nwafor

Abstract

It is important that for a teacher to undergo training on on-line teaching, he/she must be abreast and acquaint himself with the objective, lesson plans, student's activities and preparatory assessment instruction for an intending online student. Teaching in online environment is faced with new challenges and the teacher should be able to meet with these challenges for effective online teaching. The teacher must also design the curriculum and the instructional strategy, assessment and methodology suitable for his/her teaching. The aim of this paper therefore is to develop an effective online teaching ability for professional teachers. It is recommended that the teacher should make adequate preparation, give personal evaluation on his/her preparedness to teach outline and finally design instructional strategies relevant to online teaching.

Teaching and learning online has become a vital supportive and collaborative part of the delivery of education and educational materials to both students and teachers alike. Undeniably, the greatest benefit to be found in online teaching and learning is the possibility of giving people who wouldn't otherwise be able to attend classes, an education alternative. Online learning enables the students schedule their class work to suit their work and family obligations. Also, time, geographical location, self-pace, self-motivation and different learning styles applicable to online teaching and learning can bring positive and innovative dimensions to the education field. A teacher who must embark on online teaching should be fully prepared. The teacher must ask himself and provide answers to the following questions.

Table 1: Teachers Preparation for On-line Teaching

Interacting	(a)	How will the teaching happen?
	(b)	Will the teacher have a collaborative workgroup? If yes
	(c)	How will the students be grouped?
Instruction	(a)	When will information be provided to the students and how?
	(b)	Should the instruction be web sites?
Study	(a)	What will the online teacher expect the students to 'do' when they study?
Experience	(a)	What will the students "do." To gain experience?
Re-enforcement	(a)	What specific things will the teacher use to strengthen and reinforce the learner throughout the course
Evaluation	(a)	How will the learning be measured?
	(b)	What online tools can be used to measure and access data?

The teacher should bear in mind that every student is not an effective learner; therefore he should design a course that will help the students learn how to learn. The teacher should encourage the students to inculcate good study habits, time management skills, effective communication skills. These characteristics will enable the students to learn.

Table 2: Evaluating Teachers Preparedness to Teach Online

S/N	Questions
1	When a teacher's classroom materials are instructionally sound, he would not need instructional re-design for the e-learning environment.
2	E- learning is all about providing the right content to on-line students
3	For the online teacher, building an online course is just as important as creating the most appropriate learning solution for a given problem
4	The online teacher is more of a guide on the side line, facilitating learning rather than teaching.
5	A good on-line teacher who really knows his subject does not need to consult fellow professionals who had experience in online education
6	Once an online teacher has mastered the act he can now release and follow his daily routine.
7	A good offline teacher should make or easily convert to a good on-line teacher without much adjustment or continuous effort.
8	In preparing online lectures, the on-line teacher needs not be concerned about the fact that many of the prospective e-learning students may already to been in employment.
9	It is impractical to personalize the training of e-learning students. A standard well prepared e-learning course should do for every body.

The answers to the above questions should be **yes** all through; these determine the preparedness of the teacher to embark on online teaching. However if any of the question is answered no, it then means the teacher is not yet prepared.

Curriculum Design Teaching

The online teacher should break the course content into weeks and let the students have the information about the content and objectives. The first week which is WEEK I will be an introductory week whereby the on-line teacher introduces himself to the students and vice-versa; this should be done through a class mailing list (listed). Also the student should be able to read the web pages and explain the requirements of the course textbooks, supplies, hardware and software. The students should be able to access their own information and learn to communicate with the teacher in the online-teaching/learning environment.

Week II: The students take the online self-assessment test; the students are directed to online tutorials that provide lessons in using E-mail and the internet. The students evaluate their skill level and send e-mail messages sharing self-assessment information. The teacher then provides a lecture on the importance of knowing how to learn and the various types of learning styles.

Week III: The teacher will provide a lecture on their time management and organizational skills. How the students will manage their e-mail messages? What electronic filing system will they develop for the assignment they complete in word and excel should students message be printed. Also the students are asked to determine if they plan to work on the course from home, school or work? The purpose of reviewing time management technique and asking the students to respond to these questions and complete these activities is to get them to be mindful of the time it will take to attend to the online course.

Before embarking on online teaching, the teacher/instructor must rethink how he teaches, how his students learn and how he might redesign his classroom of the future.

Instructional Design Strategy

It has been shown by Inique Halleth (1999) that instructional design can be approached as follows:

1. Chose appropriate extent for the e-learning course.
2. Prepare course learning goals and corresponding performance objectives
3. Break down each course learning goal and performance objective into sub goals and corresponding sub-objectives, each pair representing the smallest unit of learning that is measurable.
4. Organize the course learning goals and performance objectives in some logical fashion where applicable.
5. Organize the sub-goals and sub-objectives within course learning goals/performance objective into a logic order where possible/applicable.
6. Treat each pair of course learning sub-goal and corresponding performance sub-objective as a learning object.
7. For each learning object prepare
 - i. The content needed to meet the e-learning sub goal and performance
 - ii. A listing of all practices
 - iii. A listing of all assessment items capable of measuring the extent of learning achieved.
 - iv. A brief chipset of all the reading materials recommended to participants including areas of concentration, this will help the instructional designer know how to fine tune the instructional design. The periodic provision of online evaluation forms to e-learning students at carefully selected points during the learning process could help to elicit proper feed-back from the students. A good mindset during instructional design is to aim at active learning by the e-learning students while functioning merely as a guide working from the sideline to facilitate learning by discovery rather than as a “Mr know-it-all” dishing out all the stuff from the podium, typically.

Typically classroom exercises and activities are replaced with such self-placed interactive elements as discovery exercise of multiple choice questions, because e-learning is relatively new compared to the traditional classroom experience the instructional designer should:

- i. Endeavour to be up-to-date at all times by making good use of e-learning publications (e.g. news letters, journals, magazines and other relevant materials from interest groups?)
- ii. Encourage e-learning students to keep abreast of issues in the field of e-learning.
- iii. Learn from the experiences and mistakes of forerunners as contained in the various publications.
- iv. Use the services of a Subject Matter Expert (SME) where available, than converting traditional class room material to e-learning formats
- v. Provide a carefully thought-out e-learning reinforcement to enable online students capture a flavour of the reinforcement techniques used in the traditional classroom. The following short list may help as reinforcements in the e-learning situation.
 - a. If a student scores 70% and above in a quiz or assignment or online examination send a special honour e-card to reflect commendation for excellence
 - b. For scores from 60% send a congratulatory e-card for that very good performance.
 - c. For scores from 50 to 59 send a positively encouraging e-mail saying “that was a good effort. Surely, you are going to do better.
 - d. If a student scores below 50% send an encouraging e-mail saying “thank you very much for that effort. I am confident that as you give it more time in the future you will do better. Thus everybody gets encouraged, unlike the traditional classroom when only the very good students are positively reinforced.

- vi. Provide alternative courseware formats to suit different individual learning styles, and have a pre-enrolment interaction with prospective students during which such preferences are determined.
- vii. Judicious use of multimedia facilities and courseware design, even if an expert in the effective use of multimedia technologies needs to be consulted and do not use technology for its own sake.
- viii. Endeavour to at least approximate the personalized learning facility offered by intelligent tutoring systems, Hawaii (1999). At strategic points a student is given an objective test and the student's is used to determine the next set of materials to start off the e-learning student with, and a courseware presentation sequence that best suits a given student.
- ix. Endeavour to meet minimum acceptable standards and review your instructional design from time to time as e-learning techniques evolve and as you obtain feed back from the-learners and re-touch your instructional design as appropriate.

Effectiveness of Project-Based Learning Perspective

The teacher should make his course more effective by basing the learning on a semester project. It has been observed that the project based learning helps students to engage actively in self-exploration, self-discovery and self evolution. Project based learning can be quite successful if well utilized. The following are the activities that can contribute to the success of project based learning, Hawaii 1999.

- (a) Effective goal setting
- (b) Teaching student project management skills
- (c) Effective project consultation and monitoring
- (d) Effective feedback.

Timely Feedback/Assessment Methodology

In normal classroom activities, it is common for the teacher to ask for student's feedback but for on-line teaching, the teacher will request that student's responses be forwarded to his e-mail address. Their responses will be filled in a form issued by the teacher and contains facts like (a) what worked well for him (b) what did not work well for him, (c) what suggestions the student has for improvement (d) other comments/remarks. There would be a link to this feedback on the web pages and there will be weekly instructions to complete the form Saragina (1999). The on-line teacher will then respond to each of the feedback form personally with words of encouragement and appreciation for their comments.

Their comments and suggestions will enable the teacher to improve upon his work while the teacher's responses will nurture and encourage the online students to continue participating.

Library Resource and Services

The purpose of libraries is to provide information services in support of teaching/research. The aim of the library is to make materials/resources accessible to all members of the academic community regardless of location (4). The goal of an on-line library to:

1. Provide online inter-library loan forms so that articles and books can be more easily ordered by both students and teachers can move easily order articles and books.
2. Provide online reference service through the web.
3. Provide online orientation.

Library resources and services should be provided for effective on-line teaching for teachers, this is because:

1. On-line teaching desire the same support from libraries as that extended to on-line campus teachers.
2. Research has shown that access to library resources and services increases the quality of education the on-line teacher receives.
3. Equal access to library resources is required by accreditation panel for on-line teaching and learning. Library and teaching resources will ensure equity of access for on-line teaching and learning by making information available to them in a timely fashion, regardless of the

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location of the teacher and the student. Other likely reference and referral services, information, competency and instruction will be provided through online communication tools.

4. Libraries should participate from the beginning in the planning of on-line programs and courses each course should contain what library requirements are and what materials are needed to support online teaching and learning.
5. Traditional on-line campus library services cannot be stretched to meet the library needs of on-line teaching and learning.

The following library services should be provided to online teachers & students to the same extent to which they are provided to on-campus learners/teachers:

1. Access to electronic resources which enables the teachers have access to databases, full content electronic books, statistical, journals, indexes, encyclopaedia and reference sources.
2. Reference and referral services which provide the teachers access to professional information, research, reference, questions and development of information research strategies.
3. Library user training/information competency which enables the development of skills and knowledge to effectively select, retrieve, use and evaluate information disseminated in online.
4. Borrowing privilege which provides the on-line teachers with borrowing privilege in libraries.
5. Course reserves service provides the online teachers with electronic access to syllabi, class schedules, lecture notes, handouts, assignment, final exam schedules and full-text of recommended teaching.
6. Access to library resources and services should be an integral part of the educational experience of on-line education; the access should match that of on-campus education.

On line teaching and learning is an integral part of the future education. This is because it enables the students to have more experience in the environment than their instructor. Students in an online learning environment have to learn to deal with information coming and going in all directions, hence they will realize that online learning requires a rethinking of the way they manage information and fresh approach to learning.

Benefits of On-Line Teaching & Learning are

The benefits of on-line teaching and learning are as follows

1. Online education guides students who approach education from pragmatic consumer – oriented perspective into building relationships which facilitate learning, actually education is not something that the teacher can deliver like clean diapers or mail order cloth. Students must be involved actively in the act of teaching; they are human beings with brain and need to be part of the learning.
2. On-line teaching helps the teacher to grow with technology and the unique ways its enhances teaching.
3. On-line teaching is a major player for training workers in the work place.
4. On-line teaching takes care of individual learning styles of the learner as the course ware are prepared in line with their individual learning style i.e. visual, Aural, and kinaesthetic/tactile.
5. On-line teaching makes the teacher get out of having to go to class this way or that.
6. Online learning encourages students to contribute their experiences, share their insight, and frame thoughtful reflective questions; anecdotal evidence had suggested that they feel closer to the faculty and to their fellow students in on line course.
7. On-line study gives room for self-discipline and matured time management.
8. On-line courses are easier and less tedious than traditional face-to-face instruction.
9. On-line course encourages work and study programme, a situation where by the students work during the day and commute to campus once or during week ends.
10. On-line teaching and learning makes students master effective use of computer (e-mail and internet). Since these are the prerequisites for taking online course, they must realize that they have a “double work load” namely catching up on necessary computing skills while at the same time having to keep up with the particular course content and assignment.
11. On-line learning is basically “a class of one’ only” therefore there is a total concentration by the students; distraction is considerably reduced if not totally eliminated.

12. The social interaction envisioned to elude online learning and make the course distant is not applicable thus an on-line student once wrote. "I did feel as if we were all in the same room. In fact, I found myself talking out loud or laughing out loud as if every one could hear me. We might not have been n the same room looking at each other but I definitely felt we had made these all – important connection that helps the class as a whole.
13. In an on line Teaching and learning. The reading materials located on web pages are easier and quicker to study than a textbook.

Conclusion

It is true that mistakes have been made in the past by teachers who hurriedly ventured into online teaching without adequate preparation. The author strongly believes that all the necessary activities/strategies enumerated must effectively be carried out by the teacher before embarking on an online teaching. Such strategies as having a good instructional design, making his course more effective by basing learning on a semester project, giving timely feed back to the students and using adequate methodology in both teaching and evaluation. Besides the teacher must ensure that good library resources and services are provided to the students. It is hoped that if all these are carried out, an effective online education will be achieved.

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