

Study of the Index System for Assessing Learner-centered Online Courses

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Abstract

With the development of e-learning, the quality of web-based courses attracts extensive interest. This paper draws upon the results conducted amongst students enrolled in an online language course at a northern Chinese university. The design of the course aims to create the learner-centered environment: personalized learning environment, peer-learning environment, and a new School-to-Work model etc. By using a special framing, the three main factors are closely integrated in one online course design. Based on the data collected and analysis, the study indicates establishing an effective and practical assessment index system will help maintain the high quality of online learning.

Keywords: Web-based course, Personalized learning environment, Peer-learning environment, A new School-to-Work model, Effective formative assessment index system

1. Introduction

In recent years, education field has moved rapidly towards integrating technology or computer in the process of teaching and learning. This is because computer has a great potential for enhance teaching and learning outcomes (Fisher, 2010; Suchanska & Keczkowska, 2007). Online learning as defined by Chang and Fisher (2003) is a system and process that connects learners with the materials and information that distributed online. Rigid timetables, classroom-based teaching, theoretical concepts—these were once the hallmarks of higher education programs. Today they are beginning to fade as more and more students opt for the flexibility, accessibility, and career-skills focus of online and continuing education. Online education is opening up opportunities for a growing market of non-traditional learners. In fact, the number of non-traditional undergraduate students (over the age of twenty-five) is expanding faster than the traditional student group.

But as with anything new and potentially disruptive, skeptics abound. There are many controversial issues related to the effectiveness of online instruction. One claim that online instruction lacks the ability to satisfy the diverse learning needs of online learners. In other words, unfortunately, many educational websites do not employ principles of effective learning (Cook & Dupras, 2004). Others argue that the whole process of online learning is hard to be tracked down and evaluated, so the quality of instruction cannot be guaranteed. There is still strong challenge from those who pay more attention to practice. They point out that there is a great gap between online learning and real job market. Since users are moving toward online learning, we should consider the following questions. How to attract the users individually? How to give them more motivation, independence and self-directed learning? How to design a website to match the individuals? How to convey information with different environments to a diverse set of personal types? How different individual learners interact with the web-based instruction? What kind of individual differences that our users have (Martinez, 2001; Chen & Paul, 2003)? Furthermore, how can online courses compete with lecture-style courses? What are the biggest draws of online learning to the job market?

Although many researches have been made in this field, the problem deserves new research. All previous research results are rarely integrated in one online course design. And current online course design still can not answer how to enhance the connection between online learning and the future job market. Therefore based on such online course design, the assessment index system cannot guarantee the high quality of online learning. More innovative work on the assessment index is needed.

This study was motivated by the need to develop an effective online assessment index system. Based on a study

report on an Interpretation online course in a Chinese university, the author initiates a unique assessment index system for online learning which motivates both instructors' and learners' engagement and cultivate the learners' practical ability to get the hands-on skills they need to be able to function on the job and become the successful job candidates in today's competitive job market.

2. Literature Review

According to Attwell (2007) Personal Learning Environment is an environment that constructed by individual. Individuals are responsible for their own learning more effectively and take a larger stake in the ownership of the content. Riecken (2000) stated that personalization helps teacher to build a meaningful one to one relationship with students, by understanding their needs. The personalized environment also helps students to reach a goal because their individuals' need is well addresses in a given context. Motivation theorists argue that the reason individuals perform actions is not only because of external interests but for their intrinsic needs such as happiness, enjoyment, and curiosity (Malone, 1981; Davis, Bagozzi & Warshaw, 1992). Researchers have found that people will spend more time and effort on a task and have increased exploratory behavior and greater acceptance of information technology when tasks create a high level of intrinsic motivation (Igbaria, Parasuraman, & Baroudi, 1996). In the past decades, strong commitment has been made to high quality e-assessment too, and good initial progress has been made. Topping (1998) reviewed the impact of peer assessment between students in higher education on writing, and found large positive effects. These studies provide strong evidence that good assessment practices produce large performance gains. In Australia, Barnes, Clarke and Stevens (2000) traced the effects of changing a high-stakes assessment on classroom practice, and claimed evidence for a direct causal link. An extensive literature review by Black and Wiliam (2002) showed that well designed formative assessment is associated with major gains in student attainment on a wide range of conventional measures of attainment. This result was found across all ages and all subject disciplines. K.H. Wang, T.H. Wang, W.L. Wang and S.C. Huang (2006) have elaborately explained the formative assessment strategies used in a web-based learning environment. Their research showed that both learning style and formative assessment strategy are significant factors affecting students' achievement in a web-based learning environment. In 2008, Popham defined formative assessment as a planned process during which the teacher or students use assessment –based evidence to adjust ongoing learning and instruction.

3. Method

3.1 Formative assessment

The notion of Formative Evaluation was first put forward by Scriven. In his classic paper "The Methodology of Evaluation" (1967), he introduces the terms "formative assessment" and "summative assessment". In 1970s, Bloom classified assessment into diagnostic assessment, formative assessment and summative assessment. Table 1 will give us a clear understanding of the differences among the three assessments.

Table 1. Three assessments classified by Bloom

	evaluation period (the development period of an event)	evaluation aim
Diagnostic assessment	before	earn the conditions, the starting point and diagnose the reasons
Formative assessment	during	monitor the development, collect the feedback information and offer the improving suggestions
Summative assessment	after	evaluate the whole effect, offer the evaluation achievement and make the all-round assessment

A. Why is Formative assessment?

From table 1, we can easily find that formative assessment focus on the process of an event, laying more emphasis on monitoring, correcting and improving. It is a fact that online learners are quite different from regular school students. They are differing in learning styles, skills, and aptitude. Their age span is big. How to monitor the online learners development, get updated feedback and make correspondence improvement become so urgent and

significant.

B. What is the Aim of formative assessment?

- Online instructors may take advantage of the feedback information they collected to modify their teaching plan, methods and process in order to improve their teaching proficiency. In the long run, they can create personalized learning environment to accommodate differences in online learning.
- Online learners may use the feedback information to adjust their learning strategies, process, activities and etc. By realizing their own limits in learning habits or methods, they can timely adjust their studying methods in order to fully develop their potential intelligence and completely carry out the educational goals.

3.2 A study report of an Interpretation online course

A. Research background: Since the formative assessment is required and advocated by the college English Curriculum Requirements in China, this interpretation online course was launched to collect data for future establishment of assessment index system in English Language & Literature discipline.

B: Course description: Interpretation course is a required course for the third year English majors with 2 credits. As part of this course, the 40 hours (32 hours online learning + 8 hours online internship) online course accounts for 1 credit.

Study time is recorded automatically online. The instructor is responsible for the update of the content every two weeks and uploads the live materials at time needed.

C: Credit Requirements:

* Minimum study time limit: 32 hours

* the lowest right percentage: the instructor may set up the lowest right percentage, let's say 55%, that is to say, if a learner's score of a quiz or the right answers for an exercise is less than 55, he could not go on his study.

* at least 5 hours peer learning

* at least 2 hours internship

D: Subjects

Table 2. Participants of the Interpretation online course

Class No.	Students Registered	Account	Credit
Class 1	20	20070901**	1
Class 2	22	20070902**	1
Class 3	23	20070903**	1

E: Course design

(a) Self-learning:

* Textbook learning

* Game-based learning workshop

(b) Group work:

When planned and managed well, group work is an important factor in student's success in online learning. Group work with a valid purpose, when thoughtfully managed with explicit rubrics and making guidelines can provide many benefits to students.

* Discussion

* Project

(c) Role play and simulation:

Role play and simulation are forms of experiential learning (Russell & Shepherd, 2010). Learners take on different roles, assuming a profile of a character or personality, and interact and participate in diverse and complex learning

settings. Learners learn through their explorations and the viewpoints of the character or personality they are articulating in the environment.

(d) Online internship

It is based on the philosophy that learners learn best through active engagement in meaningful activities. Connecting activities to integrate school-and work-based learning are an essential part of School-to-Work (STW). At LaGuardia, the required co-op seminar helps students make connections by giving them a structure within which to reinforce employability skills, examine larger issues about work and society, and undertake the crucial activities of critical reflection.(Grubb & Badway 1998)

Thus, like STW, the online Co-op Community model should include web-based and work-based learning such as seminars and online instructor-coordinator work site visits. These activities help online learners explicitly connect work and online learning.

* What happened in China? ----CCTV Program (Face to face)

* What happened on campus? ----Seminar; signing ceremony

F: Evaluation of the students' performance

Table 3. Study report of the Interpretation online course

	Class 1					Class 2					Class 3				
Students registered	20					22					23				
Students being interviewed	3					12					4				
Total hours online	611					480					706				
Group work time	180					87					199				
Online internship involvement (Percentage)	120					64					142				
Online credit owners	15					7					17				
Final exam score	A	B	C	D	F	A	B	C	D	F	A	B	C	D	F
	2	5	5	3	5		1	4	2	15	7	7	2	1	6
Job tracking				

G: The formula to calculate learners' capacities' change

Based on the data collected in table 3, further analysis has been studied by means of using formula to calculate learners' capacities' change in the whole process of learning.

Suppose X1 stands for learners' involvement in this online course. X1 can be easily and clearly reflected in table 3 such as total hours online, group work time, and online internship involvement, etc.

Suppose the degree of learners' involvement is X2. X2 shows how much the learners are engaged in the course.

To indicate how learners' involvement influences their capacity change, C and C1 is introduced. C1 is used to stand for the learners' achievement before participating in this assessment learning while C stands for learners' capacity after it.

Suppose:

$$C = f(X1, X2) + C1 \quad (1)$$

In formula (1), $f(X1, X2)$ stands for the increasing capacity during the involvement. If a learner hasn't taken part in the assessment, $f(0, 0) = 0$. If a learner has completely devoted himself to the process, then,

$f(1, 1) = 1$. So the learners' capacities' change is $f(X1, X2)$, $0 \leq f(X1, X2) \leq 1$.

4. Results

4.1 A practical assessment index system

Table 4. An effective online assessment index system

	The Evaluation Index Score	The Index Weight	The Final Score
Self-learning	Online time		
	Learning contents		
	The right percentage of exercise		
Peer-learning	Discussion		
	Project		
The online Co-op community Assessment	Seminars		
	Job-shadowing		
	Self assessment		
	Peer assessment		
Performance	Instructor assessment		
	Quiz		
	Exam		
	...		
Total			

4.2 Examine the learning effect of the formative assessment index system

A. Since the online formative assessment index system can track down, record and check the whole progress of learning, it can be used to calculate online learner's capacities' change.

* The degree of learners' involvement: it can be reflected from Table 3 such as online time, the right percentage of exercise, discussion, role play etc.

* Interview those learners who really need help: based on the timely feedback of the system, the instructor can have a clear idea about the learners' involvement which will directly influence their future achievement. The instructor should interview those learners who really need help, or talk about the problem in the Group Work (discussion) section and offer the best solutions.

B. Since the online formative assessment index system can collect statistics on what materials or content the learners show interest in, it can be used to create a personalized learning environment.

* The characteristics and preference of the learners: The data collected from Table 3 such as online time, the learning contents, co-op etc. can indicate the learner's preference

* Design an appropriate learning environment based on learners' preferences or differences (Sampson, Karagiannidis, & Kinshuk, 2002). Acceptance of constructivist approaches in mainstream education has brought about the realization that learning process are more effective and successful when the instructional approaches and content are geared towards individual learners. (Kinshuk, 2012) Unlike traditional learning environment which is often designed for the "average learner", the online personalized learning environment will provide the materials that are depend on the learner's characteristics such as learning styles, skills, interests etc.

C. Since the online formative assessment index system creates a unique online Co-op community, it can be used as a new STW model.

* The participation and performance of the learners in online collaborative learning activities: The number of learners who participate in the online internship shows learners enthusiasm to know the external world. The more online hours the learners engaged in, the more popular the courses become.

* Provide a full Toolkit for the future job market: It is about giving learners the full set of skills they need to enter into a career. The instructor should design practical and attractive online internship course such as a Live Interview, a Videotaped Job shadowing or even great talks with local entrepreneurs etc.

5. Discussion

With advancements in communication technology, online education may one day be able to replicate even the most technical of school work, including labs and workshops. There are even big possibilities around simulations and 3D virtual environment. And it is only going to continue to grow. This study indicated that it is important to try a new STW model (it is called online Co-op community)as a typical formative assessment index. The theoretical approach of communities of practice is characterized by mutual engagement, joint enterprise, shared repertoire, and negotiated meaning (Alavi & Leidner, 2001). Under this structure, the community creates the social fabric of learning. Therefore, this kind of learning is in terms of changing forms of participation in ongoing cultural activities (Saadé & Bahli , 2005;Legris , Ingham , & Collette ,2003).

This study was motivated by the need to develop an effective online learning. This study utilized the theory of formative assessment, the peer learning idea and take advantage of the theory of community of practice in an attempt to identify opportunity, suggest ways forward and create a scientific and effective formative assessment index system of online learning. Thus, this paper established a comprehensive, objective, scientific and accurate formative assessment index system to ensure the online learning would be mostly successful.

Although the new concept is theoretically practical, the design and assessment of the actual Co-op community is still a big challenge and major challenges ‘going to scale’ yet to be faced. Cultural differences should be considered. A great deal of innovative work is needed, coupled with a grounded approach to system-wide implementation.

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