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Editorial

Technological Revolution in Education – Part 4
Donald G. Perrin

Advent of the printing press was the first step of the technological revolution. Printed information is time-binding and space binding. It spurred the renaissance and religious revolutions and facilitated globalization of knowledge and trade and accelerated progress toward the iron age and industrial revolution.

Photography had a similar impact on visual communication, especially when combined with printed text in books, magazines, newspapers, and textbooks. The first permanent photographic image was produced in 1826. The motion picture was born after George Eastman released photographic emulsion on celluloid film in 1889. Visual language, developed by the makers of silent films, facilitated storytelling and re-creation of life-like experiences. Though animation and special effects, it was possible to visualize worlds and events of every kind and draw audiences into the story through empathy and emotional response.

Motion pictures became a powerful medium for education, training, and research. They opened invisible worlds through high speed and slow motion photography and by motion analysis. They allowed us to examine subjects of astronomic and microscopic size and see phenomena beyond the visible range of the human eye.

Bela Belaz (1921, 1952) observed how print, and later the motion picture, changed social communication and expression:

> The discovery of printing gradually rendered illegible the faces of men. So much could be read from paper that the method of conveying meaning by facial expression fell into desuetude.

> Victor Hugo wrote once that the printed book took over the part played by the cathedral in the Middle Ages and became the carrier of the spirit of the people. But thousands of books tore the one spirit, embodied in the cathedral, into thousands of opinions. The word broke the stone into a thousand fragments, tore the church into a thousand books. … The visual spirit thus turned into a legible spirit and visual culture into a culture of concepts.

As knowledge and meaning came from the printed word, we no longer saw the facial expression of its author. However, newer communication technologies brought yet another change:

> ... a new machine is at work to turn the attention of men back to visual culture and give them new faces. This machine is the cinematographic camera. Like the printing press, it is a technical device for the multiplication and distribution of products of the human spirit; its effect on human culture will not be less than that of the printing press. … The gestures of visual man are not intended to convey concepts which can be expressed in words, but such inner experiences, such non rational emotions which would still remain unexpressed when everything that can be told has been told. … What appears on the face and in facial expression is a spiritual experience which is rendered immediately visible without the intermediary of words.

Television integrates films into its many live and recorded program offerings; these are inexpensive, ubiquitous, and universally available.

Computers add data processing and Internet with hyperlinks and interactive multimedia.

Smart phones, i-phones, and androids add social media.

Every known communication medium has been integrated into computers and portable devices including laptops, tablets, and mobile phones. The products of the "Information Age" provide a global network that links all communication devices and peoples. It is not only having a positive economic impact, it is leveling the playing field for the economies of developing nations.

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Editor's Note: This is a comprehensive study that relates theory and practice to reasons why some students do not complete their online course of study. This is useful for program planning and as a predictor of student success.

An assessment of the reasons for non-completion in online learning programs

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New Zealand

Abstract

The increasing popularity of online learning programs has generated much interest among both practitioners and researchers, particularly with regard to the predictors of learning outcomes. This study examines the non-completion outcome in the exploratory mode with the purpose developing a program-level framework of its predictors. Data was gathered from a live online program to support an initial theoretical framework. The analysis revealed that non-completion is influenced primarily by factors from three categories: characteristics of the student population, characteristics of the institution, and characteristics of the employer sponsors. These three factors are theorized to influence the both the non-completion rate, and hence persistence of the student population. Previous research has demonstrated that both non-completion and persistence should be correlated to other learning outcomes.

Keywords: Online learning programs, non-completion, attrition, learning outcomes

Introduction

Millions of adults pursue online training and learning every year from a growing pool of private providers and academic institutions. The industry as a whole is experiencing tremendous growth, as well as the accompanying growth pains, lessons learned, battles fought, and victories and defeats on both sides of the podium. The success of online learning programs is of interest both to academic institutions and to the many businesses and professionals that are looking toward online learning as a solution to job-related training and professional career development (Svetcov, 2000; Singh, 2001). Research on the issue often produces conflicting or ambiguous results (Abrami and Bernard, 2006; Merisotis and Phipps, 1999).

Both the research and practitioner literature focus almost exclusively on individual-level effects of the online technology among online learners (Aragona & Johnson, 2008; Harrell II & Bower, 2011). As yet, very little work has addressed online learning at the program level, a fact observed in previous research (Alavi and Leidner, 2001). This is a critical consideration, because in practice online learning technology is typically embedded in larger programs of instruction or training each with its own administrative, pedagogical, and demographic characteristics while most of the research tends to focus on individual effects related to the online delivery medium without accounting for the characteristics of its host program. There are also a profusion of professional certification, training, and development programs offered online, even though academic "programs", as such, are often the first to come to mind. Although some support may be borrowed from research on traditional academic programs, the unique characteristics of the online learning environment, its participant learners, and its institutions demand a re-evaluation and extension of existing research at the very least, and perhaps at most the development of an entirely new theory of program-level outcomes.

Course non-completion in online programs is a critical consideration for several reasons. Most research on the subject is ad hoc, exploratory, or disconnected from existing theories or

frameworks, whether they be theories that are native to learning outcomes or cross-disciplinary theories. This is partly excusable because there are currently few good theories or frameworks that support research on course non-completion in online programs (Jun, 2005; Wang and Wang, 2004; Morgan and Tam, 1999). Although non-completion is a subject of growing interest among researchers, only a few studies have attempted to explore even a moderately rich concept of non-completion (Jun, 2005; Aragona & Johnson, 2008; Harrell II & Bower, 2011), and none have captured the fullness of the non-completion phenomenon. Rather, most of the research opts for a relatively sterile approach to non-completion in online programs (Frankola, 2001; Terry, 2001; Zielinski, 2000). A deeper understanding of non-completion will benefit: 1) researchers by enabling more rigorous controlled comparisons between online and traditional programs, 2) managers of online programs by providing information to help resolve some of the conflicting and contrary results that dominate the practice in the field, and 3) working professionals and their parent firms by providing information about how to most effectively embed online delivery methods in their professional training and development programs.

Non-completion also involves a tremendous loss to someone in the system: the employer who has a stake in the success of their employees; the learner who misses the learning opportunity; or the institution that may absorb the negative effects of non-completion and goodwill of learners who are unable to complete their courses, to name a few. All three of these participants in the online learning process have a vital interest in reducing the program's non-completion rate.

It is the goal of this research to develop a framework that addresses course non-completion in online learning at the program level. In this regard the study will take on an exploratory approach to the problem, viz. to revisit factors at the individual level with a view toward developing a program-level framework of non-completion in online learning environments. Therefore, we did not distinguish between the various definitions and nuances of non-completion. For the purposes of this study we adopted the definition of non-completion as it is defined by the host institution under study, specifically any outcome where the student is not assigned a passing grade for the course (F or W) – outcomes which require the course to be taken again.

Literature Review

Course non-completion is only one of many learning outcomes possible. At the program level, course non-completion is manifested as the aggregate course non-completion rate amongst all students in all courses, much like an aggregate GRE score may be defined as an indicator of a program's level of student preparedness for graduate studies. We choose to begin our investigation here for two reasons: 1) course non-completion is the first and most visible evidence of learning outcomes in an online learning program and 2) course non-completion is correlated with other learning outcomes (Hiltz, 1993). Although this study is directly observing only non-completion, it is entirely likely that it is both an early indicator of the presence of other significant outcomes, and that other learning outcomes are being observed indirectly through the correlation between those outcomes and the reasons being offered for non-completion.

This research does not intend to confirm or contradict previous research which compares the effectiveness of online learning *technology* to other instructional media (Russell, 1999; Clark, 2000). This study considers the online *program,* which includes all the associated administrative and academic policies, embedded online delivery technology, curriculum, instructors, learners, and other factors that make up the whole. We do not restrict the definition of "program" to degree programs, although we operationalize the concept using data from an online program that offers several academic degrees. In other words, a program may be a training program consisting of a series of workshops, a professional certification program where participants may earn one or more certificates depending on their "track", or an academic degree program offered by a university.

However, online programs must take into account the effect the effects of instructional technology. Media Richness Theory predicts that online media are less rich in their ability to transfer some forms of information on account of the level of "richness" supported by any given media's communication channel (Sun and Pei, 2007; Shepherd and Martz, 2006). By extension, it is reasonable to expect that online learning technology as a medium is less rich in its ability to transfer some forms of information that are typically exchanged in a learning environment. For an online program to maintain a level of effectiveness comparable to face-to-face instruction, it therefore becomes necessary for the program to compensate for the deficiencies of its technology in order to maintain effective learning outcomes, such as by means of program policy or infrastructure.

The Participants: Students, Institutions, and Employer Organizations

The existing research seems to address effects according to their association with the participants in online programs: the students and institutions (Arbaugh, 2005; Leung and Lee, 2006; Keller and Suzuki, 2004; Wang and Wang, 2004; Bourdages and Delmotte, 2001; Aragona & Johnson, 2008; Harrell II & Bower, 2011). There is also a growing body of evidence that suggests a third party, the employer, is also a significant contributor to online learning outcomes (Wang and Wang, 2004). Employer organizations participate through their sponsorship of learners through tuition and related assistance, and job-related incentives for learning and professional development (Frankola, 2001; Singh, 2001).

Learner Factors

As the subject of learning outcomes, the learners have received the largest share of attention from both researchers and practitioners. Generally speaking, the research has recognized various individual psychological factors (Aragona & Johnson, 2011; Arbaugh, 2005; Jun, 2005; Morris, et al., 2005; Wang and Wang, 2004; Bernard, et al., 2004; Curless, 2004; Dupin-Bryant, 2004; Keller and Suzuki, 2004; Olson and Wisher, 2002), and demographic, situational, or personal factors associated with the learners (Harrell II & Bower, 2011; Wang and Wang, 2004; Dupin-Bryant, 2004; Curless, 2004; Bourdages and Delmotte, 2001; Frankola, 2001; Morgan and Tam, 1999). There appears to be little or no research on the subject of learner population characteristics that contribute to program-level outcomes.

Employer factors

Perhaps the most noticeable omission from the non-completion literature is the near-total absence of studies that investigate the effects of employer- and job-related factors on non-completion. Most evidence for employer effects on learning outcomes comes from practitioner-oriented literature (Osberg, 2002; Frankola, 2001; Singh, 2001; Wang and Wang, 2004). Since the primary model for online learning involves creating a level of convenience for working professionals who would not otherwise be able to pursue traditional learning opportunities (Carr, 2000), this omission demands immediate and serious attention from both scholars and practitioners. Furthermore, a large number of learners in online programs are sponsored by their employers through tuition payment, reimbursement, or similar means of financial assistance. Many firms also sponsor their own training programs, using both face-to-face and online delivery methods. Indeed, the employer plays such a significant role as to raise the question over whether online learning programs might be understood most effectively as a partnership between the institutions of online learning and the employers as their primary clientele.

Institutional and Program-related Factors

The characteristics of online learning programs are controlled by the institutions that administer them. As such, program-related factors may be either dependent on institutional policy or have their own independent institutional characteristics. For instance, institutions of higher learning

often impose policy on their online programs that is consistent with their internal or regional accreditation requirements, which result in program-related factors that are dependent on the institutional policy (Bocchi, et al., 2004; Cavanaugh, et al., 2004; Bernard, et al., 2004; Terry, 2001; Cavanaugh, 1999). Online programs also "inherit" characteristics of their parent institutions, such as those associated with size, quality of instruction, or reputation (Leung and Li, 2006; Wang and Wang, 2004; Cavanaugh, et al., 2004; Bourdages and Delmotte, 2001; Cavanaugh, 1999). It is also very common for institutions to administer their online programs independently, usually by the formation of a "Training Department" or "Department of Distance Learning", or some other similar designation.

This study will continue in an exploratory mode designed to capture the fullness of the non-completion problem with the goal of generalizing a framework at the program level. The "Methods" section will employ a survey designed to capture the multitude and fullness of different reasons for non-completion reported by learners in an online program and the accompanying analysis of the results. The "Discussion" section will use the analysis to generalize a framework that applies to non-completion and related outcomes at the program level.

Methods

Sample

The online program that is the subject of this study is administered by a medium-sized private university. The program is generally comparable to other online degree programs across a broad range of variables: regional accreditation, program policy, faculty qualifications, faculty compensation, faculty expectations, course requirements, curriculum, student demographics, student qualifications, tuition, and a number of others. The online program offers several degrees through several academic departments of the university, although it is managed collectively by a single and independent administrative unit of the university. It is the judgment of the researchers, both of whom possess significant experience with research and practice in both academic and professional online programs, that this online program is adequate for the purposes of this study, specifically to capture the fullness of reasons for non-completion in online degree programs.

Data were aggregated from degree-seeking students enrolled in the online program who failed to complete a class for whatever reason after they enrolled in the class. Over 110,000 student-terms were reported for the online programs, which included over 19,000 respondents reporting over 30,000 reasons for course non-completions during the eight-year period from fall 1999 to spring 2006. A "student-term" is defined as one student enrolled in the university for one term. Students were allowed to report once per term, up to six terms per year, over the eight-year study duration. Students were also allowed to report more than one reason for non-completion, thus resulting in there being more reasons reported than non-completions.

All students who failed to complete any course(s) for which they had registered were invited to complete a short survey (< 5 mins.) that allowed them to report the reasons for their non-completion. Demographic analysis (age, gender, state, previous education, previous online education) revealed a high likelihood that the students in this program are representative of the population of online degree-seeking students.

The Online Degree Program

The university is regionally accredited and has a thirty-five year history with non-traditional education, and since 1998 has become involved in the development, administration, and delivery of online programs. The university also maintains a well-developed traditional academic program at its home campus, and a network of satellite campuses that target adult and career-oriented students, all of which are regionally accredited. It is fair to say that the university has significant institutional experience in the administration of non-traditional and distance learning.

The university partnered with a third party to provide infrastructure, support, and marketing for its online degree programs. For each class, students receive a packet that contains a syllabus, notes and slides for each lecture, accompanying materials, and a CD that contains streaming audio-video recordings of the professor delivering a 15-minute lecture for each unit. Additional course materials and activities are also made available through a website that allows uploading and downloading of files, chat sessions, discussion forums, testing and grading, and many other education-related features.

Professors teaching in the online program are provided some basic instruction regarding the expectations for professors who teach online classes, a curriculum guide for their particular course, and a packet of pre-developed teaching materials. The university maintains "quality control" policies for online professors that require faculty to maintain certain "standards", such as response times for student inquiries, weekly discussions and chats, student engagement, and various "communication" policies which on the face seem to be aimed at alleviate the inherent "unrichness" of communications in the online environment (Sun and Pei, 2007; Shepherd and Martz, 2006).   Professor effectiveness for online courses is monitored by the university's administrative unit for online programs with respect to these policies.

Courses are eight weeks long, and typically consist of two units of instruction per week. There is one week of intermission between terms, for a total of six terms per academic year. The content of online courses is monitored by the faculty in the traditional programs to ensure that their consistency and integrity is roughly equivalent to the same courses in the traditional programs, and also because it is necessary in order to maintain their regional accreditation. The university sees itself as an industry leader in the delivery of online education.

Survey Development

The survey was developed by a team of experts, all of whom possessed significant experience in online education, and were intimately involved in this specific online degree program. A list of reasons for non-completion was developed based on both the existing literature and the prior experience of the researchers. Respondents were allowed to report "other" in case their reason was not already represented in the existing survey.

The survey employs the "check all that apply" approach to ensure that all significant reasons for non-completion are captured by the study. Respondents were also allowed to provide a detailed explanation of their reason for non-completion, if desired. This allowed a judgment to be made with respect to whether or not the survey provided adequate reasons to explain each respondent's non-completion, or whether the study was limited in this respect.

After data had been collected for one term, a pilot analysis determined that the survey was adequately capturing the full range of reasons for non-completion, and an inspection of the reasons given for the "other" category indicated that no statistically significant categories had been omitted. The threat to the study with respect to whether or not the survey provided adequate reasons to explain non-completion was judged to be minimal. The survey therefore demonstrated adequate validity for the purpose of ongoing data collection.

Furthermore, the pilot study assessed the demographic characteristics of the learner population. Since the length of the survey was restricted by institutional policy, continuing analysis of population demographics was not feasible. The only unusual demographic is the disproportionately high number of females who reported non-completions, 55%, which is slightly higher than would be expected. This could be due either to sampling error, or indicative of some gender-related disadvantage. Otherwise, it is the judgment of the researchers that the sample drawn for the pilot study is representative of the sample frame throughout the duration of the study, and no further threats are posed. Table 1 summarizes the demographics drawn for the pilot study.

Table 1
Sample Demographics

N	108
Age	
20-24	8%
25-29	16%
30-34	15%
35-39	19%
40-44	20%
45-49	12%
50-54	7%
55-59	3%
60+	0%
Gender	
Male	45%
Female	55%
Degree seeking	96%
Previous online courses	63%
Purpose of enrollment	
Job requirement	6%
Job training	11%
Self-development	83%
Financial support	
Personal	49%
Job – unconditional	12%
Job – conditional on grade	43%
How many classes?	
1	42%
2	55%
3	3%
4	1%
How many hours work per week?	
<10	6%
10 – 20	5%
21 – 30	3%
31 – 40	21%
41 – 50	45%
>50	20%

Measurement

Operationally, when respondents offer reasons for course non-completion they are manifestly stating the *causes* of their non-completion. The relative proportions for each reason are by definition correlated as cause-and-effect with the program non-completion rate. This will in fact result in the structure to support an initial framework of the non-completion phenomenon.

Since the number of non-completions varies between terms, institutions, and programs depending on the enrollment and size of the student population, program level variables are operationalized as the relative proportions of students in the program who are characterized by each variable of interest. For instance, the program-level measure of "personal/ family issues" is formed by

calculating the proportion of students who reported that as a reason for non-completion. In this manner, proportions were computed for each variable in the study. Although the primary data are individual reports of course non-completions, by aggregating individual reports into program-wide proportions we operationalize course non-completion at the program level as the rate of non-completion attributable to each reported cause of non-completion.

Respondents were allowed to report once per non-completion. The survey allowed multiple reasons to be reported as necessary in a "check all that apply" format. It is noteworthy that 72% of respondents reported only a single reason for non-completion. Hence, the proportions reflect the ratio of any given non-completion reason to the total number of reported reasons, rather than the total number of individuals. Since the goal of this research is to develop a program-level framework, and the proportions represent program-wide non-completions, and only 28% of individuals participating in the study reported multiple reasons, the threat posed by allowing individuals to report multiple reasons was judged to be minimal.

Analysis

Student Characteristics

In the pilot phase of the study, descriptive data was collected from a subset (n = 108) of the study population for the purpose of initial instrument development and to gain an understanding of the general characteristics of the student population. Descriptive data were not collected from all respondents on an ongoing basis in order to keep the survey as short as possible for the respondents. Since this study was not concerned with any demographic or descriptive variables, this was not considered to be a limitation of the study. Of the 108 participants in the development stage, 45% (n = 49) were male, and 55% (n = 59) were female. With regard to their motivation to enroll in an online program, 6% (n = 7) did so because it was a job requirement, 10% (n = 12) were pursuing job training, 45% (n = 53) were engaged in self development, 31% (n = 37) were preparing for a job or career change, and 8% (n = 9) had other reasons for enrolling. With regard to their means of financial support, 12% (n = 12) were receiving unconditional support from their employer, 43% (n = 45) were receiving support from their employer that was conditional upon receiving a passing grade, and 45% (n = 47) provided their own means of support.

Non-completion Data

The study observed an overall 12% (n = 112,428) non-completion rate in the online program. This is consistent with results from other studies (Bocchi, et al., 2004; Carr, 2000).

The survey asked the participants to provide an explanation for their decision to withdraw from their class. Table 2 reports the total number of times each reason was reported, along with the respective proportions of the total and their associated 99.7% confidence intervals. All confidence intervals are significant and fall entirely within the acceptable range of 0 – 1, which is recommended for estimates of proportions (McClave, Benson, and Sincich, 2001). Global error was controlled at a cumulative $\alpha = 0.05$ across all eighteen reasons, which represents a test value of p = 0.0028 per reason, and thus the rationale for reporting the more conservative 99.7% confidence interval.

The results indicate that the three largest categories are an increase in work responsibilities (19.71%), personal or family issues (16.39%), and overwhelming course demands (13.96%). These three categories represent just over 50% of all non-completion reasons reported, or approximately 10,000 non-completed courses. The fourth most common reason, at a distant 8.54% (n = 2,600), is students who reported that they registered for too many courses. Most of the other reasons represented between 1% - 5.15% of the total, and the lowest proportion (0.86%) was associated with previous college courses not being transferred.

Table 2
Relative proportions of reasons for non-completion,
with 99.7% confidence interval

Reason for non-completion	TOTAL	lower 99.7%	percent of total	upper 99.7%
My responsibilities at work have increased.	6,002	19.02%	19.71%	20.39%
Personal/family issues.	4,990	15.75%	16.39%	17.02%
The course demands overwhelmed me.	4,251	13.36%	13.96%	14.55%
I registered for too many courses.	2,600	8.06%	8.54%	9.02%
I was not academically prepared for this course.	1,567	4.77%	5.15%	5.53%
I didn't have access to the necessary technology.	1,539	4.68%	5.05%	5.43%
The course materials arrived too late.	1,484	4.50%	4.87%	5.24%
Illness.	1,479	4.49%	4.86%	5.23%
I registered for the wrong course.	1,019	3.04%	3.35%	3.66%
The course materials were unclear.	909	2.69%	2.98%	3.28%
I needed more help with the technology.	876	2.59%	2.88%	3.16%
Learning online is not for me.	830	2.45%	2.73%	3.01%
I can no longer afford the tuition.	809	2.38%	2.66%	2.93%
I felt pressured into enrolling for this term.	595	1.72%	1.95%	2.19%
I did not receive Financial Aid.	532	1.52%	1.75%	1.97%
I had issues with my instructor.	405	1.13%	1.33%	1.53%
I missed interacting with other students.	304	0.83%	1.00%	1.17%
My previous college credits did not transfer.	263	0.70%	0.86%	1.02%
TOTAL	30,454			

DISCUSSION

Other factors involved with non-completion

Given the findings of this study and the findings of previous research that correlates various learning outcomes, future studies should consider how online programs are compensating for the deficiencies inherent in the online technology. This should be demonstrated by research with an appropriate level of scholarly rigor and control. The next section will discuss specific strategies for minimizing some of the problems associated with online program non-completions, in ways that will result in positive outcomes for all participants: employers, institutions, and student populations, and lead to the proposal of an initial framework of online learning program outcomes.

Non-completion Issues

Although some of their proportions may seem small, the reasons given for non-completion are significant because of the volume of students involved, and therefore becomes relevant for

administrative purposes at the very least. For example, even the smallest proportion in this study (0.86% for "previous college credits did not transfer") represents approximately 163 students over the five-year period represented by the data. In other words, every one of these reasons for non-completion, no matter how seemingly small, are potentially significant at the program level, not even to mention the potential losses to the employers and the learners.

For the purposes of the ensuing discussion, the reasons for non-completion are categorized according to their association with their respective participant in the online program: the learners, the institution, and the employer. Since employer effects have received little attention previously, over 40% of the non-completions reported in this study are related to reasons that are new to the body of research.

The Employer

Work related issues are the largest single factor resulting in non-completion of courses. Respondents reported this as a factor in 19% (n = 6,002) of all non-completions. The study revealed that over 50% of those who did not complete courses actually worked over 40 hours per week with 17% working over 50 hours per week.

Employers may be able to exercise remedies for some of these losses. For example, some simple employee screening may reveal which employees are most likely to succeed. Employers may also offer their employees information about the leading causes of non-completion in advance so as to help potential applicants decide whether they should enroll for any given term. It could also be helpful if the employer is able to provide information about an employee's work schedule that may impact his or her ability to succeed in an online program.

Of course, the most effective means of ensuring that an employee will make good decisions about whether or not to enroll is to make them at least partially responsible to pay for their own tuition and expenses. To illustrate this, consider the full range of possibilities for dividing costs between the employer and employee, with learners who pay for everything out of their own personal resources on one end of the spectrum and the employer paying for everything on the other. It is reasonable to expect that a learner paying for their own education is more likely to be responsible and hard-working. Whereas, it is reasonable to expect that a learner being supported completely by the employer is more likely to be careless with the employer's money. This sort of policy is, in fact, already in place for many employers, as evidenced by the 43% of students who received conditional funding from their employer.

In summary, the employer has many possibilities at their disposal to manage the costs and effectiveness of sponsoring their educational and related training programs. Giving supervisors the opportunity to use their judgment with appropriate justification before approving employer-paid education can be of double value to the employer. It trains supervisors in evaluating their subordinates, estimating future job requirements, and justifying their decisions with supporting data. At the same time, the employer has the opportunity to identify supervisors who are competent and those who require additional training. In this case, employers who are more proactive in reviewing requests for paid education and determining how and when time can be made available for employees to obtain necessary or desired education should expect clear benefits.

To the administrators and managers of online programs, this suggests an opportunity to form partnerships with employers for the purpose of mutually-beneficial learning outcomes. For example, perhaps certain types of communications between employers and the program about learner progress and performance may help alleviate the burdens and losses associated with student non-completion.

The Learner-Employee

Approximately 88% of the students in this study were responsible either for their own funding or funding conditional on receiving a passing grade. Since the institution in this study implements a very flexible refund policy, it is difficult to determine what proportion of the losses attributable to non-completions were directly absorbed by the learner population and what proportion is absorbed by the program or the employer. We were also unable to account for how many of these non-completions were resolved in a mutually beneficial manner, such as issuing a tuition credit for future courses, which would result only in losses related to the administrative costs of applying the credit. In that regard, this finding is limited, however, it does not diminish the magnitude of the aggregate proportion. The leading causes in this category are personal/family issues (16%, n = 4,990), and not having access to appropriate technology (5%, n = 1,539).

The learners should be the best judge of their own ability to complete a course, especially where the factors in question are directly under their control, as it is with not having access to required technology, not being academically prepared for the course, unable to handle course demands, having personal family issues, inability to cope with online learning, missing interaction with other learners, and inability to afford tuition. Although some may argue that program advisors should be able to lessen the failures attributable to these causes, it is unreasonable and ethically questionable to expect such advisors to become involved in the personal affairs of the learners. In fact, many institutions and programs do have "teams" of advisors available to assist students with these kind of issues, as the program in this study does.

Although it directly affects the learners, illness and related problems are beyond most peoples' control and can be thought of as simply random loss. Hence, this study did not assign illness as a factor to any of the three categories under consideration. However, as noted above, employers and learners-employees can be more proactive in reviewing health and family issues before enrolling in learning and training programs, whether they be online or traditional. In this study 4.9% of non-completions were attributable to illness.

The Institution/ Program

The institution bears more responsibility and exercises more control over non-completion and related learning outcomes than either the learner population or the employer. The institution designs and develops the curriculum, and administers and offers its programs to prospective learners. In this study, 29% of the reasons for non-completion are attributable either in whole or in part to the institution. The leading reasons in this category are: overwhelming course demands (14%, n = 4,251), registered for too many courses (9%, n = 2,600), and being academically unprepared (5%, n = 1567). Although most institutions and their programs would rather not adjust their course demands to satisfy learner desires, it is feasible to implement controls to account for the learners' lack of academic preparedness and registering for too many courses. The program in this study did, in fact, adjust their policies over time to account for student preparedness and course load.

Of the three participants in online education, the institution is also in a position to be the most flexible. This is reflected by generous withdrawal and refund policies implemented by the institution in this study. Such policies, although seeming benevolent, may actually have negative effects on both non-completion rates and other learning outcomes. For instance, since a generous withdrawal policy places less accountability with the learner, it might result in a higher proportion of learners enrolling to "see what happens", and waiting until a late date to withdraw rather than thinking twice about enrolling in the first place. Generous refund policies could have the same effect, encouraging learners to enroll since such a policy places little or none of the learner's own money at risk.

Proposed Theoretical Framework

Figure 1 depicts a proposed theoretical framework for non-completion rates and other learning outcomes in online programs. The principal contribution of this model is that it represents non-completion, its antecedents, and learning outcomes at the program level. Secondarily, the model depicts the persistence of the student population to be influenced by employer factors, learner factors, and institutional factors. Previously, the inclusion of employer factors has been absent from this field of inquiry. It is also noteworthy that this is a causal model since the data supporting it represents the reasons students reported for why they failed to complete their courses. For example, we predict that when a student population experiences increasing work responsibilities, it is a cause of non-completion rather than simply being correlated with non-completion.

The reasons for non-completion revealed by this study support the inclusion of three separate categories of program-level influences: employer factors, learner factors, and institutional factors. Each of these may be operationally defined in terms of relative proportions or averages of variables in their respective categories, or by similar program-level measures. For instance, with regard to funding for tuition, a hypothesis may propose that the relative proportion of students paying for their own tuition and expenses will affect various learning outcomes. Other hypotheses might propose that the proportion of the student population experiencing overwhelming course demands will affect the persistence of the student population, that the type and level of institutional control (refund policy, course demands, faculty vs. administrative control, etc.) influences persistence and other learning outcomes, or that curriculum type (e.g. more demanding vs. less demanding) affects non-completion rates.
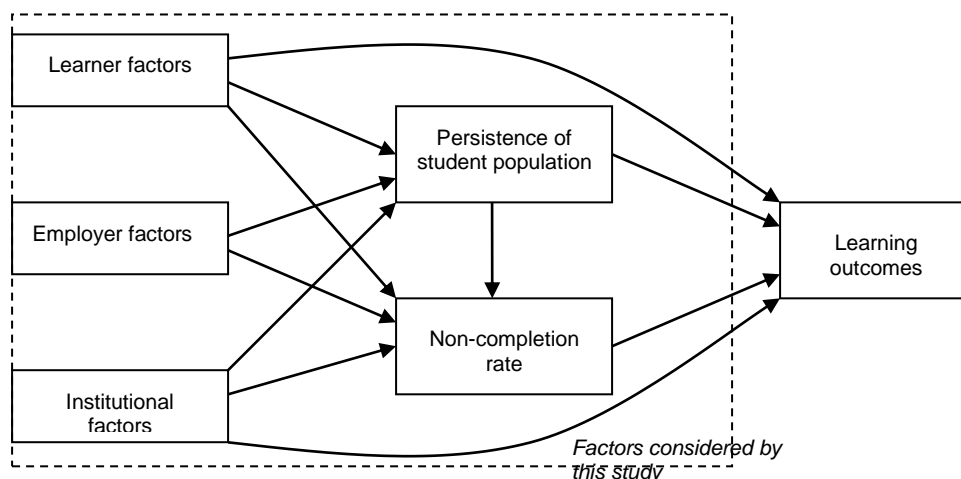

Figure 1. Framework of factors that affect the non-completion rate and other learning outcomes in online programs

Although persistence was not the main subject of this study, it is represented in the model because it is the logical alternative to non-completion, as in previous research (Bourdages and Delmotte, 2001). We chose to represent them as separate variables to allow for persistence to be influenced by external variables that may have little or no effects on non-completion but a positive effect on persistence, even though in some circumstances it may be possible to define persistence as the inverse of non-completion. For example, employer incentive programs may have positive effects on population persistence but little or no effect on non-completion rates, since non-completion rates may be related to factors that have nothing to do with the level of employer incentive programs available to the learner population.

We define persistence as the latent characteristic of any given student population that contributes to its members' ability to remain in good standing until the completion of their respective programs. Given this definition, the proportion of the student population meeting such conditions becomes a direct indicator of persistence, but there may be other indicators as well. As such, there is a negative relationship between persistence of the population and the program non-completion rate. We should also expect a negative relationship between non-completion rate and other positive learning outcomes, as in cases where the non-completions reflect the attrition of poor students, and thus the retention of higher-performing students who manifest increased positive learning outcomes. The model depicts learner, employer, and institutional factors to be antecedents to both persistence and non-completion, and persistence to be an antecedent to both the non-completion rate and the population's ability to achieve positive learning outcomes. The issue of how persistence contributes to positive learning outcomes, however, is outside the bounds of this study – we present it here as an opportunity for subsequent research.

Limitations

Although we are not aware of any studies that correlate program non-completion rates with positive learning outcomes, previous research has demonstrated that many individual learning outcomes are inter-correlated (Hiltz, 1993). It is reasonable to expect the program non-completion rate to be similarly correlated with various other positive learning outcomes. This is an initial study that allows limited inferences to be made about the relationship between the relative proportions of reasons for non-completion and positive learning outcomes among the student population. Subsequent research should clarify the relationship between program non-completion and positive learning outcomes.

The method of measurement is limited in that multiple reasons are coded as having equal weight, although in reality one reason may be more influential than others. Although this was a necessary trade-off that allowed accurate population proportions to be determined for non-completed courses at the expense of greater richness in the understanding of non-completion reasons, over 72% of the responses were reported only a single reason for non-completion, 27% to two reasons, and less than 1% to three. Of the 27% that reported two reasons, only a very small percentage offered an explanation of their reason which indicated that one reason was more influential than the other. Thus, the threat to the study on account of this limitation is judged to be minimal.

The study is also limited in that the data were gathered from students in a single, albeit very large online degree program. It is possible that the results are systematically biased by factors peculiar to this particular program of online education. This threat to the study was judged to be minimal on account of the wide demographic variety of students who responded to the survey, and the industry best practices employed by the university in the administration of their online degree programs. Although a limitation, this allows for the effects of a wide variety of systematic institutional biases to be controlled, since all respondents are students of the same institution, subject to the same policies, the same degree requirements, the same curriculum, and so on.

Conclusion

In summary, this study provides both a comprehensive view of non-completion in online learning programs and a framework for supporting subsequent research on the issue. The results have implications for the institutions of online learning, the learners, and employers and professionals who have interests in either sponsoring or becoming involved with an online learning program. Although online learning programs suffer from a systematic handicap, Suggestions and recommendations are proposed for both researchers and practitioners to facilitate progress and the success of all the stakeholders in online learning.

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APPENDIX:

Survey Instrument

Reason for withdrawing

I registered for the wrong course.

I registered for too many courses.

Learning online is not for me.

The course demands overwhelmed me.

I didn't have access to the necessary technology.

I needed more help with the technology.

I missed interacting with other students.

I had issues with my instructor.

The course materials arrived too late.

The course materials were unclear.

I felt pressured into enrolling for this term.

I was not academically prepared for this course.

My previous college credits did not transfer.

I did not receive Financial Aid.

I can no longer afford the tuition.

My responsibilities at work have increased.

Illness.

Editor's Note: This paper documents step-by-step the process of transforming a face-to-face seminar into a synchronous online course. It provides much useful information for course developers and for faculty who are asked to teach their course online.

Synchronous Online Teaching:
Using Web Conferencing Tools for Discussion and Activity-Rich Courses

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USA

Abstract

This study explores the pedagogical benefits and barriers of one web-conferencing system (Adobe Connect) in supporting a constructivist, dialogue-rich, synchronous online learning environment. This evaluative case study examines the author's attempt to translate a face-to-face (F2F) Foundations of Education course to a synchronous online environment. The article first provides a review of literature on teaching synchronously online. This review offered potential positives and negatives to the practice, but the available literature did not help the author effectively envision a discussion and activity-rich fully synchronous online class using web conferencing tools. The article seeks to fill that literature gap by detailing the researcher's experiences using this new format for facilitating a seminar-style course. Thick descriptions of both the positive and negative experiences of teaching this course are included.

Keywords: Adobe Connect, web conferencing systems, synchronous online, seminars, constructivism, foundations of education

Introduction

About four years ago, my department chair began planting hints that she would like me to take my graduate foundations of education course online in order to reach students who were at a significant distance from our Southwest Virginia campus. Whenever the topic came up, I tried to run the other way. The idea of taking my discussion and small-group-activity-laden, face-to-face (F2F) course online repulsed me. I could not conceive how this course, based as it was in constructivist learning theory, could possibly be replicated as an online/distance class. At the time, my understanding of online classes was that they were all based on either book work assignments (read the text and submit chapter questions electronically) and/or audio or video-recorded lectures. To me, this idea seemed tantamount to going back to the Stone Age in terms of pedagogy for I have spent the better part of my academic career railing against conventional, teacher-centered, transmission-oriented education in favor of more generative, student-and-community centered constructivist pedagogy.

When it became apparent that there was no way to continue to avoid what seemed inevitable, I sighed in resignation and began to explore translating my F2F class to an online setting. I did some research on online learning and teaching, explored what tools were at my disposal at the university (e.g. Adobe Connect, Blackboard, Web CT, etc.), and set about determining whether my constructivist, dialogue-rich, community-of-learners course could effectively be implemented online.

While I did encounter research asserting that online courses could be designed that were constructivist and centered on building a community of learners, almost all that literature was about courses that were done wholly or partly asynchronously (Anderson 2003; Anderson, Fyvie, Koritko, McCarthy, Murillo Paz, Rizzuto, Tremblay, and Sawyers 2006; DiPietro, Ferdig, Black, and Preston 2008; Johnson 2006; Kowch and Schwier 1997; McAlister, Ravenscroft, and Scanlon

2004; Moller 1998; Motamedi 2001; Palloff and Pratt 2007; and Park and Bonk 2007). And while I certainly now acknowledge that such courses can be rich experiences for the students (and convenient for learners with diverse needs and distances from campus), the things I pride myself on in my F2F classes -- facilitating well-paced, high-energy and mutually enjoyable whole-group dialogue and interactive small-group activities that draw on multiple intelligences – were the very things that I felt could not be done effectively in an asynchronous online course. What I really wanted to do was try to make my online course synchronous (real time) and as identical to my F2F courses as possible. The literature on synchronous aspects of online teaching was more sparse than asynchronous, but it did offer up some hope that what I envisioned was at least possible, if not ideal.

The Literature on Synchronous Online Teaching

Synchronous online courses mean that members are "meeting" in real time. Students and teacher could all be at separate locations, each in front of his / her computer and connected through a web conferencing system (e.g. Elluminate, Adobe Connect, online chat, or conference-call programs), or students and teachers could be distributed over several distance locations with access to high speed internet connections, and audio and visual connection to the different sites (students may be F2F at the different sites with a handful of other students, but various distance sites are all connected together, so the whole class is not fully F2F with one another). This variety was reflected in the literature reviewed; however, there were common themes that emerged about synchronous teaching and learning that transcended such specifics. While there was acknowledgment that synchronous online teaching had its positives, there were frequent warnings of the potential pitfalls inherent in such teaching and learning.

The Positives

The first positive mentioned whenever synchronous (or asynchronous) online courses are mentioned is the convenience for learners who do not have to undertake the time and expense to travel to a central location for a F2F course. Also, online courses are often more convenient for students with physical disabilities. The acknowledgements of convenience appeared in nearly all the literature reviewed.

The next most evident positive of synchronous online teaching present in the literature was that technology has come a long way in terms of offering teachers a multitude of tools to use to bridge the geographical divide between class members. Authors seemed impressed with what such programs as Second Life or Second Life-type 3D programs (Dickey 2003; Ligorio, Talamo, and Simons 2002), Interwise (Ng 2007), Elluminate (Anderson, et al. 2006), Adobe Connect (Grant and Cheon 2007; Rockinson-Szapkiw and Walker 2009), as well as broadband distance-site connections (Freitas, et al.1998; Knipe and Lee 2002; MacIntosh 2001; Smyth 2005), internet-based chat and virtual conferencing tools (Davidson-Shivers, Muilenburg, and Tanner 2001; Duemer, Fontenot, Gumfory, Kallus , Larsen, Schafer, and Shaw 2002; Johnson 2006; Spencer and Hiltz 2003; Wang 2008; Wilkinson and Hamby 2000), and learning management systems (Schwier and Balbar 2002) could offer in terms of synchronous online learning.

Second Life and Second Life-type programs allow students to manipulate things in a 3D-like space online, great for design or engineering courses. Interwise, Elluminate, Adobe Connect, and similar web conferencing systems allow classes to have synchronous verbal or written chats, use a common white board space, pull in and display PowerPoints or videos, and put students into private break out groups for small group work. Internet-based chat and conference tools allow large numbers of students to engage in real-time conversations across wide distances, yet without any significant overhead expenditures for either the student or university. And broadband-based distributed sites with live audio and video features, while more expensive, allow for the teacher to demonstrate and display things in real time.

The final most prevalent positive featured in the literature on synchronous online courses was the social/community building potential of the synchronous tools as compared to fully asynchronous online learning (this is key; the synchronous online courses were put into a positive light on this dimension only as compared to asynchronous online learning. Later in this article, I will explore how synchronous online courses come up lacking in the social/community building potential when compared to F2F classes). Authors spoke positively about how students enrolled in classes with synchronous elements seemed to enjoy the social presence that could develop a bit easier than in asynchronous classes (Grant and Cheon 2007). Spencer and Hiltz (2003) define social presence as "that sense of 'intimacy and immediacy' or 'we are together' feeling, leading to increased enjoyment, involvement, task performance, persuasion, and social-emotional interaction" (p.2). For example, students in synchronous classes felt closer to their instructor and fellow classmates and more engaged, enthusiastic, and energized about the exchanges than when in asynchronous-only classes (Davidson-Shivers, et al. 2001; Dickey 2003; Frietas, et al. 1998; Kowch and Schwier 1997; MacIntosh 2001; Motterdam 2001; Murphy and Collins 1997; Ng 2007; Park and Bonk 2007; Schwier and Balbar 2002; Smyth 2005; Spencer and Hiltz 2003; and Vonderwell 2003).

Even while mentioning these positives above, the majority of literature reviewed spent considerably more space outlining the potential pitfalls of synchronous online teaching, and it is to those negatives that we now turn.

The Negatives

How are online courses different from F2F ones? Primarily, the difference is found in the use of a technological medium to bridge distances and facilitate communication between teachers and students. And it is this key difference that causes the most potential problems with online teaching – particularly synchronous online teaching. The literature identified three key technology-related negatives to synchronous online teaching.

The first was the issue of acclimation / training on the medium. For the instructor, learning the ins-and-outs (via training or individual exploration) of the capabilities of the technological medium, playing with various applications, troubleshooting course setup, and transferring materials to the online medium, are all incredibly time consuming and require institutional support for synchronous teaching to be successful (Anderson, et al. 2006; Freeman 1998; Grant and Cheon 2007).

Not only does the instructor need to become comfortable with the technology, but so too do the students. Student difficulties with the medium raise potential problems. For example, some students are not fast typists. Those who are not native speakers of the dominant language may encounter difficulties keeping up with the typed chat or verbal discussion in synchronous courses (Murphy and Collins 1997; Ng 2007; Schwier and Balbar 2002). Some students may feel intimidated by the medium and feel less comfortable / more self-conscious speaking verbally into a microphone, and / or sharing their typed thoughts freely to unseen/unknown others (Boehle 2000; Lobel, Neubauer, and Swedburg 2002; MacIntosh 2001; Taran 2004). Or students' learning styles may not be compatible with the online medium; written chats are often non-linear with many different threads occurring simultaneously, thus challenging certain students (Davidson-Shivers, et al. 2001; Lobel, Neubauer, and Swedburg 2002; Murphy and Collins 1997; Schwier and Balbar 2002). Also, highly kinesthetic learners may be uncomfortable with having to sit facing a computer screen for long stretches of time.

Comfort level with the technology for both instructors and students can be established over time through practice. The technology, may present another set of problems for the constructivist teacher that cannot be overcome with repeated use. These include technological glitches and the

complexities of building interpersonal relations. These problems will likely never go away and they diminish the effectiveness of synchronous online teaching.

The first problem, technological glitches, can happen in many ways, according to the literature. Weak internet connections can slow things for students, a student may be "bumped" out of the "classroom" for inexplicable reasons, a student's or the teacher's microphone may become disabled, there may be an echo or delay in the audio, a file for viewing may not load properly, etc. Dealing with these technological glitches interrupts either student or teacher (or both if the teacher tries to help students troubleshoot), thus breaking the flow and spontaneity of the class overall (Freeman 1998; Frietas, et al. 1998; Grant and Cheon 2007; Knipe and Lee 2002; Park and Bonk 2007; and Schwier and Balbar 2002).

Technological glitches can appear at any time and thus are an ever-present potential pitfall looming over synchronous online teaching. The other ever-present negative that can also probably never be fully fixed is in how the technological medium limits the potential development of interpersonal relationships between either the teacher and students or students and students. Much of the literature reviewed detailed that while synchronous online courses (or courses with at least some element of synchronous meetings) had the ability to build a better sense of community in a class than do fully asynchronous courses, they do not hold a candle to the community-building potential found in F2F courses. Many things get in the way of building a sense of community in synchronous online courses. For starters, the technological medium has a tendency to flatten interpersonal interactions. For example, being unable to see the body language, gestures, facial movements, or hear intonation or laughter of all participants limits the fullness of the class experience and adds to feelings of isolation (Boehle 2000; Frietas, et al. 1998; Lobel, et al. 2002; MacIntosh 2001; Murphy and Collins 1997; Palloff and Pratt 2007; Park and Bonk 2007; Schwier and Balbar 2002; Smyth 2005; and Wilkinson and Hemby 2000). "Downtime" is also quite different in synchronous online courses vis-à-vis F2F courses. For example, during occasional breaks, the online technology just turns off or goes on standby and the little chit-chat conversations that often occur between classmates or student and teacher in F2F classes, are typically not present online (DiPietro, et al. 2008; Frietas, et al. 1998; Knipe and Lee 2002; Motteram 2001; Taran 2004; and Vonderwell 2003). Add to this the temptation of distractions when one is not "seen" by classmates or teachers, and there may be a situation where students are not fully attending to what's going on because they're checking email, surfing the web, or even dealing with a family issue that has arisen at home. All these aspects of synchronous online courses mean that in many ways students are not as fully "present" as they might be in F2F courses, thus possibly diminishing course satisfaction and engagement and/or achievement of learning goals.

The Case Study

After reading through the literature and finding that while there are some definite positives to synchronous online teaching (especially as compared to asynchronous), but many negatives (especially as compared to F2F), I was still quite apprehensive of taking my class online. What the literature did not offer me were ways to fully visualize bringing my F2F teaching strengths (discussion and small group activities) to the synchronous online environment. Sure, online discussion could be done – but the written chat present in most synchronous online studies seemed stilted or lacking a linear stream. And I did not see in the literature many examples of the small group activities that I hoped to carry out in my online synchronous class. So, I had to go to the drawing board. What follows is a case study exploring my efforts to replicate my F2F class as fully as possible. The research question I set out to answer in this case study was: "Can Adobe Connect be used to create a highly interactive synchronous course-- rich in linear discussion, small-group activities, and a strong sense of community?" My hope is that this evaluative case

study (Merriam, 1998) will be useful in providing insights for others with similar apprehensions as mine about taking a successful F2F course online, that it will provide universities with some ideas for staff development as well as policy-making (e.g. how many students to enroll in certain online courses at a time, etc.), and that it will give specific, thick, descriptions about the sorts of activities that can be done with Adobe Connect, thus aiding others in the effective design of their own synchronous online classes.

Methodology

As I set about planning my synchronous course, I kept a field notes journal of my thoughts-including frustrations and eureka moments, etc. As I taught the class in Spring 2010 and Summer 2010, I continued to add to this journal on a weekly basis. My primary interests in this work was to get the instructor's perspective, but I also was curious as to how my students perceived the course, so at the end of the semester I asked students to fill out an anonymous open-ended question survey asking their thoughts.

Findings

Ultimately, the answer to my research question of "Can Adobe Connect be used to create a highly interactive synchronous course, rich in linear discussion and small-group activities and a sense of community" is a qualified yes. Adobe Connect does have functions that allow one to plan and carry out effective constructivist activities, but there are obstacles, some of which can be overcome with time and effort, others of which cannot be overcome, thus diminishing constructivist and community-building aspects that are more easily present in an F2F course.

The tools are there, but they take a long time to master and use

The biggest obstacle, but one which can be overcome, is the time-intensiveness of learning all the features available in a given web conferencing system. There are a number of web conferencing systems available to college instructors – Wimba, Elluminate, Interwise, Adobe Connect, etc. Typically a university picks one and licenses it for use. Each program is unique, but they may share common features. Thus while this article will be focusing in on Adobe Connect, it is quite likely that there is applicability to other systems.

Adobe Connect is capable of having a variety of "room" setups and the instructor or meeting "host" can bring in files, such as PowerPoints, videos, documents for the group members to see on their screens, or the instructor can share his/her screen with the whole class. There is also a whiteboard function where the instructor and students can post words or create visuals; there are chat "pods" which allow an instant chat between participants; there are note "pods" where the host can post instructions; participants and hosts can use the camera and microphone functions, so the class can see and hear at least one person at a time; there is a function where the teacher can split the class into breakout groups where the students can work in small groups on a task and the teacher can go in and out to the groups, checking in on progress, adding comments, etc. (See Figures 1 and 2 below.)
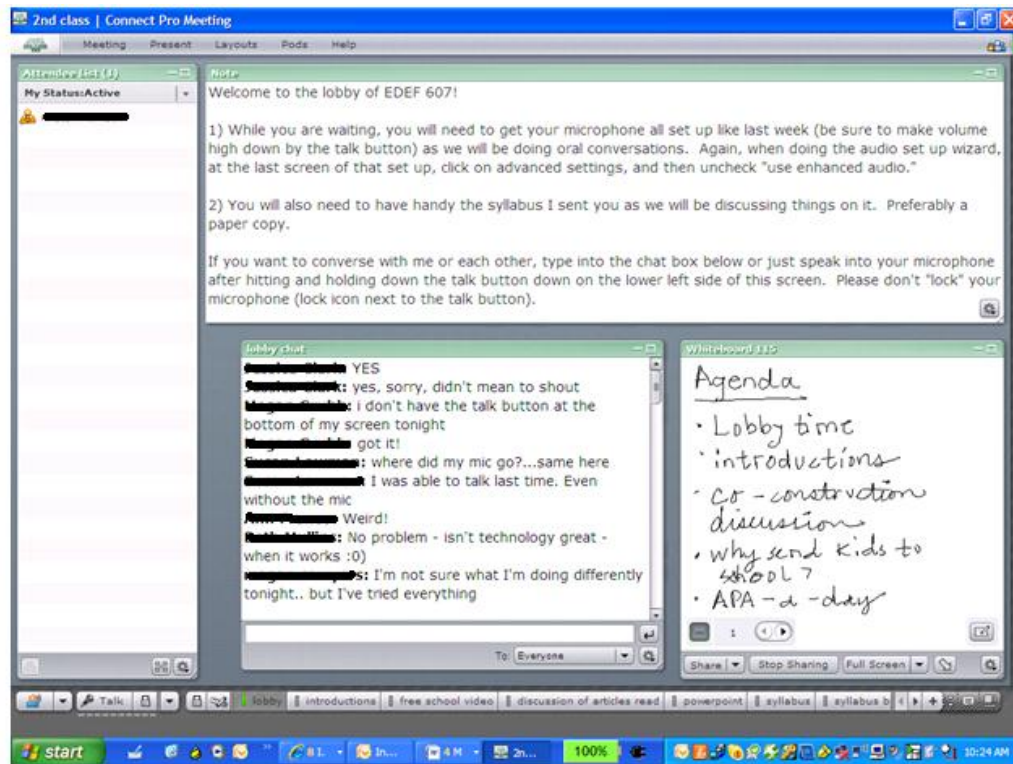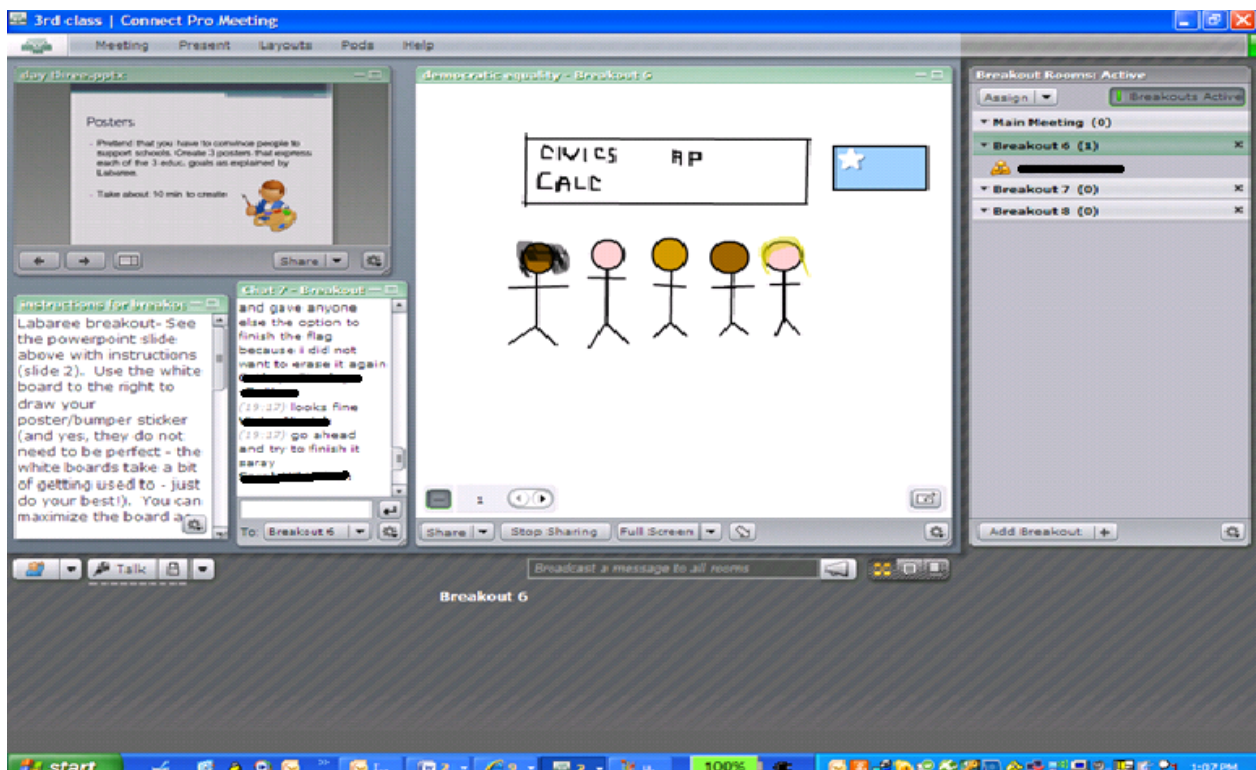
Figure 1

Figure 2.

In order to learn about all these features and plan my class, I attended a multi-session training course in the summer of 2009 and then continued working and planning through to January 2010 when my course began. The training and planning process, all told, came to about 100-150 hours of work over an eight month period. I was not paid to engage in this professional development, nor to develop my course. This is a significant quantity of time and, I believe, it is unrealistic for universities to expect that many faculty would opt to undertake this without some compensation. I chose to do it mainly because I wanted to engage in this case study research, but others without similar motivation may not want to do it.

The most time-consuming element of the whole process was the translating of small group and whole group F2F activities to the online setting. For example, in one of my F2F classes, I do a "speed debate" activity. Envision a speed dating event in which pairs of people are seated in a circle. They chat briefly and then a buzzer or announcement signals them to rotate to a new partner to engage in another conversation. In my F2F class, I give the first set of partners a question to discuss each from an opposing view point (e.g. schools should or should not be compulsory) and they have about five minutes to explore their issues with their partner before I do some debriefing with the whole class. Then the students get up, rotate to a new partner, and I pose a new debate topic. This activity in the F2F classroom is asking students to construct knowledge together, use skills of higher-order thinking (e.g. analysis, evaluation, devil's advocate criticality, etc.), and get to know one another in a sort of friendly "game" atmosphere. The activity is also meant to keep people moving rather than staying still for a long time, thus appealing to certain learning styles (Dunn and Dunn 1978). For the longest time, I could not figure out how to translate this activity to the online medium. It wasn't until I had a thorough understanding of the program's capabilities and had tried and failed at various configurations that I finally devised a way to make this activity work. I cannot overemphasize the amount of work and time that it took. I ultimately created a layout for this activity where I had numerous chat pods arrayed in a circle on the screen and instructed only two students to go into a given chat pod at a time before rotating to a new chat pod.

Another example of the complexity of translation between F2F to online follows. My graduate classes all meet just one night a week for three hours and have many students who work full time jobs. As I plan my classes, foremost in my mind are the ideas that I want to keep everyone active and engaged, and that I do not want to get caught up in the transmission-model of education; rather, I favor a process of interactivity and co-construction of knowledge (Freire 1970). Thus, in my F2F classes, there is a flow to things generally. I start class with a bit of review of previous weeks' topics, then move into a small group activity perhaps where they create a visual or a poem etc., then back to whole group debriefing/discussion, then back to small groups for another activity, and back to whole maybe to view a video clip, and so on. Thus, in a given class, we may do two to three very distinct small group activities. I discovered, through extensive trial and much error that in Adobe Connect one cannot prepare multiple small group activity layouts. One can only do multiple small group activities if they share common elements. For example, in one small group activity I might want the students to look at a PowerPoint slide, then create an editorial cartoon on a whiteboard that I could bring into the whole group discussion once break out groups are done. In the next activity I might want the small groups to create a list of pros and cons on a note "pod" while engaging in written chat. Unfortunately, I found that I could not have so many items fit into the screen to cover both small group activities. I ultimately did figure out ways to accommodate what I wanted to do, but the planning took an inordinate amount of time.

Also, because I switch activities so frequently, I had to create a screen layout for each distinct part of my lesson each night. This would allow me to shift faster between parts of the lesson- so at the beginning of class when I'm reviewing and doing some Q&A, I would have a layout with a chat pod, a file to examine, and an attendance list (had to put such a list in every layout or

wouldn't know who was in class). Then to move to an activity involving something else, I would have to create a layout screen with a whiteboard, attendance list, chat pod, etc. Even though I got faster and faster at designing layouts as I got more used to the program it still took considerable time- much more than would be needed in a F2F environment. (See figure 3 emphasized area for a sample of how many layouts had to be done per class session. There is not enough room on the screen to even display how many I created for that given night.)
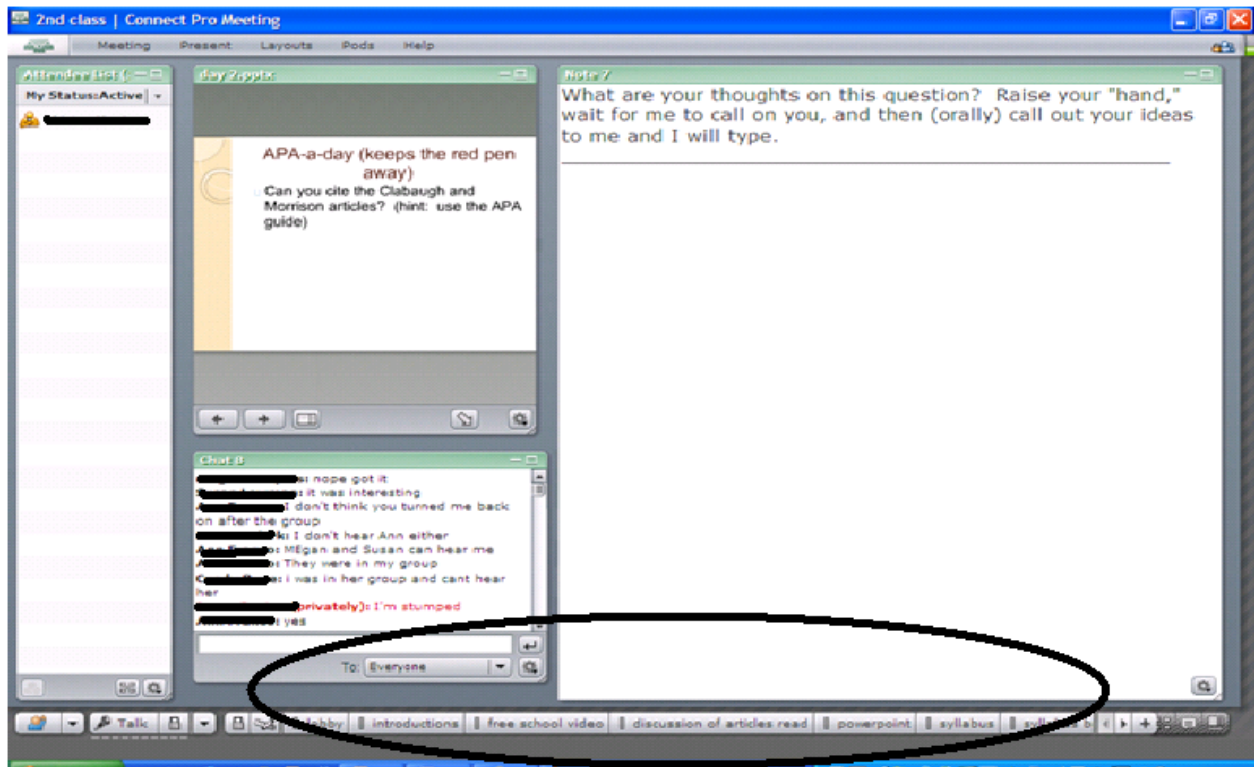

Figure 3

Another time-intensive part to the planning process is migrating materials to an online format compatible with Adobe Connect. I have a number of VHS and DVD videos/video clips that I show in this Foundations of Education course. In order to be able to access these materials through Adobe Connect, I had to digitize the images. This involved sitting at a transcribing / digitizing machine while the process carried out (in real time, so if a video was thirty minutes, I sat there for at least thirty minutes). At my university, there was not support staff in place to do this work, so I had to undertake it myself. Additionally, at the time I was first learning Adobe Connect, the program would only upload flash documents or PowerPoints for display. Thus, if I had a Word, Excel, or Adobe document to show the class, I had to go through the process of electronically converting the file. (In the past year, Adobe Connect got updates which now allow one to upload pdf's, and so this step is no longer needed).

Not only do the features of the Adobe Connect program take a good while to master, they also take longer to actually use than their F2F course equivalents. In a F2F class, transitions between whole group and small group activities are fast and easy. Not so with the online medium. Whereas in the classroom, I can quickly and easily split the class into groups by counting them off, in Adobe Connect I have to switch screens to break out groups and can either randomly distribute into groups or take the time to place people into specific groups (I often do the latter because I assign certain class members to lead on given nights, so I wanted to be sure to put a discussion leader into each small group). In F2F, if one student or small group is unclear on

directions, they can ask out loud and my answer is out there for all to hear at the same time. In the online course, if students have questions, they have to type a message to me and send it within Adobe Connect. I can broadcast my responses either to the whole group or to specific groups.

If we use the written chat pod function (as opposed to verbal discussion with the microphones) it takes students longer to get their thoughts out by typing. When a student has "the floor" in a written chat, the rest of the class is essentially staring at a blank screen waiting for the typed text to appear.

Using the whiteboard function also takes more time than would be needed in a F2F class where we could more easily use colored markers and chart paper. The tools in the whiteboard require a great deal of mouse dexterity, only one person can draw on the board at a time, and switching colors, font sizes, or shapes requires clicking on multiple places to change settings.

Getting my thoughts or directions out during the online Adobe Connect course also sometimes took more time. If a student was experiencing some technical difficulty, I often got sidetracked into helping her troubleshoot, thus pulling my attention away from the class as a whole.

All these things combined lead me to the answer to my research question of "yes, but." Yes, Adobe Connect has tools available that fairly closely replicate what can be done in an interactive F2F course, but not only do they take a long time to learn, they also require more time to use during class. Thus faculty need intense and committed training opportunities and the university may need to reconsider the typical schedule and plan extended meeting times for online classes.

The tools exist to create effective synchronous classes, but they sometimes don't work

The next part of the qualified yes to the research question is that Adobe Connect has the tools to create highly interactive synchronous courses, but sometimes these tools don't work properly, so one cannot always experience success using them. Just as the literature review presaged, technical difficulties reared its ugly head in my teaching and online Foundations of Education course.

My class experienced a variety of problems and the "victims" frequently varied; in other words, it wasn't always just the people with the sketchy internet connections who experienced problems (though those who lived in very rural areas and had only satellite internet did experience more problems generally). We had cases of students sometimes having difficulties signing into the classroom, sometimes getting bumped off, sometimes their microphone wouldn't work or gave high feedback or an echo, sometimes they could not hear me or see a file I was displaying, and sometimes buffering times on viewing videos varied so we all did not finish at the same time. One could not anticipate what technical difficulties one would experience and often what fixed a problem one time would not fix it the same way the next time it happened with someone different. The first night I taught the class, my university did provide a tech support individual who "sat in" on the class to help with some initial troubleshooting, but such a resource as this was not available on a consistent basis, thus regularly distracting the class and me from an uninterrupted flow.

Adobe Connect's synchronous classes are not as effective for seminar courses as F2F

The final qualified yes part to the answer to my research question is that while Adobe Connect can help create a highly interactive synchronous online course, rich in constructivist elements, it still isn't the same as a F2F course; some important things are missing. Linear discussions are more difficult than in F2F as is establishing a strong sense of community. The difficulties I experienced in these regards were much like those I read about in the literature.

The literature had mentioned how written chat was not often linear (lots of different conversation threads at one time), thus I had made a point of planning my class to have verbal discussion through the use of microphones. Well, not only did technical glitches for some students foil my plans there, the lack of real time visuals in Adobe Connect further prevented linear, verbal chat from effectively happening. Many students seemed reluctant to "raise their hands" (an icon option in Adobe Connect) to speak verbally. When I asked about this and gave people the option to respond via chat pod, students answered that they felt intimidated by the microphone, felt less articulate than those students who were more comfortable speaking, or simply felt they did not "know" their classmates well enough to speak out. They also cited lack of seeing visual or non-verbal conversation cues as reasons for their reticence. While I know that some students, even in a F2F course, share similar sorts of self-consciousness, I found that in the synchronous online course it was much more pronounced. To try to involve all students more, I opened up the options to "speak" – students could speak orally or through the written chat box; however, the combination of the two created the non-linear discussion thread issue I had been trying to avoid!

Not being able to frequently see body language, conversation cues, facial expressions, or hear vocal intonations, laughter, etc. not only took a great deal away from the experience for the students, but for me as well. A big part of who I am as a teacher is my physical presence in the room as well as my use of voice and humor. I pantomime things, express enthusiasm through my body movements, lighten the atmosphere with jokes, etc. And while I could still do some of those things because students could hear my voice through the microphone (we did not use cameras because of the inconsistent connection speeds for some students), it wasn't as satisfying an experience to me. For example, in my F2F class, if I crack a joke or try to lighten an intense debate with a frivolous comment, I usually get a sincere laugh or a smile from students in response. When I did this in the online setting, I would hear nothing (for only one person's microphone could be on at a time in order to limit echo/background noise issues). I joked to my class, "wow, I can hear the crickets chirping, can someone at least give me an LOL or a smiley face emoticon to let me know you heard me?!" Now, I know this is tied into ego issues and all that, but I believe that a constructivist classroom is symbiotic – that just as students need one another and need to aid in the construction of knowledge, I also very much need the feedback of students to gauge their understanding, mood, etc. And the online medium just did not provide it in the same way as an F2F class does.

A last "just not the same element" was that I struggled more with trust issues in the F2F class. I worried that students weren't being as fully present as they would be in an F2F setting. For example, in Adobe Connect, one can see when a student is typing by a message that shows up on the screen, "so and so is typing a message," so when that message disappeared from the screen, but no comments would come up in the chat box, I was left with two possible conclusions: one, the student changed her mind and deleted what she was typing, or two, she was multitasking and maybe sending email or surfing the web! The latter conclusion made me mistrustful, which diminished my satisfaction and enjoyment of the class. At least in an F2F class if the student is texting or "off task" in some other way, I can see it and address it.

Student Perspectives of the Course

As mentioned earlier, in this research I was primarily interested in exploring the instructor's perspective, but I wanted to get some idea of how the students perceived (once in spring 2010 and once in summer the course as well. I have taught this class online twice now and each class had about 15 students enrolled; at the end of each semester, I have asked the students to take an online survey answering various questions, which included:

If you HAD been able to take this class face-to-face, would you have?

If you prefer online courses over face-to-face courses, please list the reasons why below.

If you had a choice of doing this class synchronously (like we did) or asynchronously, the whole semester, which would you prefer and why?

How does this online course compare to other online courses you have taken? Detail what was better and what was worse.

What suggestions do you have for the instructor to improve this class?

Did you find yourself more or less PRESENT in class with the online, synchronous format?

Presence means being involved mind and body in the class. You would be less "present" if you found yourself distracted by things or multi-tasking in ways that you would not do were you in a face-to-face class (e.g. stepping away from the class in ways you would not do if face-to-face, going to other online applications other than our Adobe Connect classroom - such as email, etc.)

The students' perceptions of the course were quite similar to mine in terms of how most preferred a synchronous online course to an asynchronous one because of the former's community building and interactivity potential, but they found the technical and interpersonal limitations/difficulties to be detractors. And most responded that, were convenience (e.g. driving time and distance) not a factor, then they would prefer an F2F class to a synchronous online one.

Implications and Conclusions

I am torn on whether translating my successful constructivist discussion and small-activity-rich F2F course into a synchronous online course through Adobe Connect was "worth it" in the long run. I am glad that my course can reach more students through this medium, but I am dismayed by how much effort it took to make this possible and that even after all this effort, it still wasn't as satisfying a teaching or learning experience for me or my students than an F2F course would have been.

There are tremendous implications here for both businesses (who are moving more to having meetings online) and institutions of education. The importance of the human factor that comes with physical presence cannot be denied even though it is largely intangible. How many concepts were learned in less depth because the class was online? How many business deals have fallen through because the personalities of the parties could not come through the computer medium? Should convenience really trump quality of human interactions? I have written about my concerns regarding potential dehumanizing elements of online communication and I believe more needs to be explored in this regard.

Both institutions of education and businesses need to recognize the effort that goes into mastering these web conferencing programs and fairly compensate those employees who undertake using them. These organizations also need to provide extensive training and support to these individuals. I could have easily given up at many points, but my motivation of writing this article kept me going. Such motivation won't exist for everyone.

While literature comparing learning experiences of students in synchronous courses versus asynchronous online courses exist, I believe there needs to be more of it, as well as much more research comparing synchronous courses to F2F, highly interactive/constructivist courses.

Would I teach this course synchronously online again? Probably, but I'm not as excited about such classes as I am about teaching F2F. I do think that the synchronous online course can be effective and somewhat enjoyable, but I am forever comparing it to the F2F and in that regard, I believe it will always come up lacking.

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About the Author

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Editor's Note: This study focuses on distance learning in highly technical programs at community colleges. Many of these programs require innovations such as virtual or simulated laboratories and equipment for online learning. When compared to other studies, the technology has resulted in quality learning experiences to meet the requirements of science curricula, teachers and students.

Identifying the State of Online Instruction in National Science Foundation Funded Technical Education Programs at Community Colleges

Brian S. Horvitz and Richard Zinser

Abstract

Online learning within community colleges has grown rapidly in recent years. This creates challenges for leaders at these institutions including an increasing demand among students for online offerings, finding enough faculty to teach these online courses, and addressing skepticism about the effectiveness of online learning. The National Science Foundation (NSF) through its Advanced Technological Education (ATE) program funds innovations within technical education programs at community colleges and funded this study to learn about such challenges. This study surveyed ATE project leaders that have a significant online component about their programs and perceptions. The study revealed that the sample programs mostly parallel the general trends in online learning and that there are many innovations in the design of online technical courses and the use of technology to meet the challenges of these emerging fields of study.

Keywords: Community college; technical education; online learning; higher education; distance education; educational technology; instructional technology; elearning; national science foundation.

Background

Online instruction is growing rapidly in higher education. In addition to the number of courses offered online, there are corresponding increases in the number of course management systems, faculty who are developing and teaching online courses, and fully online programs. Yet much of the related literature has focused on general trends in online instruction such as enrollment data and the perceptions of college administrators. The purpose of this study was to explore the current state of online instructional technology use as a first step toward evaluating their utility and cost-effectiveness. A group of community colleges with curriculum development grants from the National Science Foundation's Advanced Technological Education (ATE) program served as the study sample. The rationale was to find out how online instruction is being developed and implemented, especially in view of the fact that technological education has some unique challenges for online delivery. Therefore a targeted survey was conducted to determine a baseline of data to help answer the basic research question: How is online instruction being developed, used, supported and funded in technical education programs that have been supported by ATE grants?

This project was designed to focus on current and recent Principal Investigators of ATE projects with substantial online instruction within their ATE programs (modules, courses, and degrees) that received part of their funding specifically for online curriculum development. Within the Division of Undergraduate Education at the National Science Foundation (NSF) resides the Advanced Technological Education (ATE) program. This "program focuses on the education of technicians for the high-technology fields that drive our nation's economy" (NSF, 2011). More specifically, this program has an interest in teaching and learning in STEM-related fields that happens in two-year colleges. They also invite "proposals focusing on research to advance the knowledge base related to technician education" (NSF, 2011). The selection process for grant proposals is competitive which results in the development of some cutting-edge programs. The

nature of the projects is action-oriented rather than focused on research, that is, the grantees produce and implement technical education for high-demand areas. However, a search of the literature reveals little recent, targeted data on the use and perceptions of online learning at two-year institutions generally, and for technical education specifically. This study sought to identify how this group of federally selected and funded projects have used grant resources to innovate in the area of online learning. The study also sought to identify some of the motivators and barriers related to developing and implementing online instruction for technical programs. Given the limited population available for this study – those projects funded by the NSF-ATE program - the focus of this study was narrow and deep, and therefore considered exploratory rather than widely generalizable.

Literature Review

Online Learning in Higher Education

Community colleges have been the area of greatest growth for online instruction within higher education (Allen & Seaman, 2007; Lokken, 2009). Further, Lokken (2009) found that online learning is the area of largest enrollment growth within community colleges. As Lorenzo (2010) puts it, "No previous form of distance education has grown so rapidly or as consistently, and community colleges have been at the vanguard of that transition" (p. 97). Assuming this trend will not be reversing soon, this creates several challenges for leaders in community colleges.

Lorenzo (2010) identifies three such challenges that stand out: dealing with increased student demand for online learning opportunities, finding faculty to teach online courses, and addressing continuing skepticism about the effectiveness of online learning among faculty. The second and third of these challenges point to legitimate concerns about what can get and keep faculty teaching these courses as well as what may prevent them from doing so. One way educational researchers have looked at this challenge in higher education is to identify the key motivators and barriers for faculty to teach online.

A key factor influencing faculty's participation in online teaching is their motivation to do so. Parker (2003) conducted an extensive literature review of over one hundred studies of faculty motivators for teaching online, and found that faculty generally teach online courses for the same reasons they teach traditional courses – for intrinsic, as opposed to extrinsic, rewards or incentives. The intrinsic rewards Parker identified include self-satisfaction, flexible scheduling, and wider audience reached; while extrinsic rewards identified were stipends, decreased workload, release time and new technology. The literature generally supports that faculty intrinsic motivators are the most powerful incentives for teaching online (Giannoni & Tesone, 2003; Maguire, 2005; McLean, 2005; Parker, 2003).

The largest recent source of data on motivators and barriers to teaching online in higher education is from the Sloan Consortium's annual report on the state of online learning in higher education published in 2007 (Allen & Seaman, 2007). In this report, Allen and Seaman found that improving student access was the most cited objective for offering online courses whereas the lack of discipline among online students was the biggest barrier to widespread adoption.

The other challenge for community colleges Lorenzo (2010) listed was an increased demand for online learning opportunities. In the face of this pressure, what kinds of courses will colleges decide to put online? According to the most recent Sloan report (Allen & Seaman, 2010), the greatest enrollment increases from 2009-2010 by discipline were for engineering, computer/information sciences and education. Given the lab-based nature of many engineering and computer science courses, this recent trend at four-year institutions could indicate an increase in the development and use of online lab-based courses. This should be of particular interest to technical education programs that often incorporate lab-based courses in their programs of study.

Lab-based Components

One of the barriers of delivering science and technology courses online has been the need to include traditional laboratory activities. Virtual laboratories are created by instructional designers using software tools that enable students to experience a "hands-on" lab for a college course on their own computers, or at a distance, instead of going to the actual laboratory on campus. In addition to the typical benefits of distance learning such as easy access, the virtual lab may also be safer, less expensive, more time efficient, and in some cases even provide a better learning experience. Comparing the pedagogy of physical and virtual labs, clearly there are differences; there is no question that the two are not "equal" but advocates of simulation technology argue that they are "equivalent". Ten years ago Forinash (2001) questioned the viability of conducting laboratories at a distance but since then several innovations in hardware and software have improved the learning experience.

Alexiou, Bouras and Giannaka (2004) for example created a virtual reality for a radio-pharmacy laboratory. Students are represented by three-dimensional "avatars" which allow them to experiment on lab "equipment" and radioactive materials, both in a study (individual) mode and a multi-user mode. Just as in a real laboratory, students can manipulate the processes and interact with others which facilitates learning (and does not prevent them from making errors).

Toth, Morrow and Ludvico (2008) designed a blended experience for a biology course using both virtual and physical labs. They reported that students preferred doing the simulated work prior to the hands-on component; students noted the effectiveness of the virtual lab, such as the ease and speed of conducting experiments, but also acknowledged the importance of using tangible skills and observation in the campus lab.

Even components of a machine tool laboratory can be simulated (Song, Wang, Balamuralikrishna, Billman, Pilcher & Billman, 2008) with cost and time advantages. Field tests showed that students were able to develop technical and social skills as well as creative thinking in a virtual environment. The researchers found statistically significant improvements in learners' content knowledge and required instructional time compared to the traditional lab setting.

Hilbelink (2009) implemented a three-dimensional laboratory for an online human anatomy course to substitute for the dissection projects conducted in the physical lab. Students were able to "visualize" the workings and relationships of the subject which proved to be more effective than learning with 2D images from a text or power point slide. Considering the popularity of health courses and the demand for online instruction this method may have potential to meet those needs.

Another interesting challenge was the creation of a "virtual bug farm" for an entomology course that replaced a field trip so students could take the course online (Annetta, Klesath & Meyer, 2009). "As the Net Generation (currently the leading population playing online games) reaches college age, the adaptation of a three-dimensional, gamelike environment into a virtual classroom seems to be the natural evolution in online learning" (p. 27). The study showed that students had a high level of engagement (presence and immersion) in the virtual environment which may serve as a supplement for science laboratories.

Methods

Data for this study was collected using an online survey designed by the researchers. The survey was created on Zoomerang, an online survey service. The survey was organized into six sections: background information, online course development, perceptions of online learning, lab-based components, course evaluation, and trends in online instruction. There were a total of 85

questions. Some items were adapted from the annual Sloan Consortium survey reports on the state of online learning in the United States (Allen & Seaman, 2007, 2008, 2010).

Data Sources

The pool of potential respondents was the list of all NSF-ATE principal investigators. In collaboration with the program officers the researchers were able to add one question to the 2010 Annual ATE Survey to determine which projects had a significant online learning component. The question was what percent of their project budget was spent on any aspect of development or delivery of online/web-based instruction. It was decided that only projects that spent at least 20% of their budget on online instruction would be contacted. The projects' total budgets ranged from $750,000 to $3,000,000. Using this cutoff, the subject pool was reduced from 234 ATE projects to 32. These project coordinators were emailed with an invitation to take the survey and were sent two subsequent reminder emails. Ultimately, 18 out of 31 possible surveys were completed for a response rate of 58%. Although a small group, this tightly focused, purposive sample provides a snapshot of some of the best efforts around the country, as determined by the National Science Foundation, to develop curriculum for highly technical courses such as nanotechnology and fuel cells.

Findings

Respondents and Project Funding

Table 1
Respondents and Project Funding

Variables	Values	Frequency	Percentage
Role of Respondent	Principal Investigator	15	83.3%
	Co- Principal Investigator	3	16.7%
Respondents' Roles	Full time Instructor	3	17.6%
	Part time Instructor	1	5.9%
	Faculty	6	35.3%
	Department Head	2	11.8%
	Project Director	5	29.4%
Funding Status	Current	7	41.2%
	Past	10	58.8%
Funding Amount		Mean=$1,035,000	
Percent of ATE Funding Budgeted for Online Learning	0-25%	10	58.8%
	26-50%	2	11.8%
	51-75%	4	23.5%
	76-100%	0	0.0%
	Don't know	1	5.9%

Respondents to this survey were all either their project's principal investigator (PI) or its co-PI. A majority of the projects they represent are no longer funded. On average, the projects they represent were funded just over a million dollars from the NSF-ATE program. Of this funding,

majority of the projects used 25% or less of their funding for online learning and over 70% used 50% or less to fund such learning.

Online Course Development

In this section of the survey, participants were asked "big picture" questions about the scope of online learning related to their ATE project. Of the projects reporting, 65% indicated that up to half the instruction created with ATE funding is delivered online. Fifty-nine percent reported that up to half of their online courses were previously taught as face-to-face courses while the remaining projects reported that over 75% of their online courses were developed specifically for online delivery. Only 6 ATE projects reported a higher proportion of online instruction compared with other programs in their department not impacted by ATE (4 were about the same, 4 reported a lower proportion, and 2 others reported there are no other programs in their department). So even among those ATE projects that spent the largest percentages of their budgets on the development of online instruction, there is still only a limited amount of online instruction taking place. These are not academic programs where almost all of their instruction is offered online.

Participants were asked about the learning management system (LMS) used for their online courses. An LMS is typically the online software that creates the environment where students interact with course content, their instructors and each other. This is where instructors track student participation and, essentially, teach using a variety of media including documents, discussion boards, videos, emails and interactive learning modules. Of those responding, 5 use Blackboard, 3 use Moodle, 3 use multiple products, 2 use Angel, 1 uses Desire2Learn, 1 uses Sakai, 1 uses Google Apps, and 1 uses a customized LMS. These numbers roughly correspond with those reported by The Campus Computing Project (Green, 2010) who found in their October 2010 National Survey of Information Technology in U.S. Higher Education that the most widely used LMS by a large margin was Blackboard (57.1%) followed by Moodle (16.4%), Other LMS's (11.8%), Desire2Learn (10.1%), and Sakai (4.6%).

Perceptions of Online Learning

Table 2
Perceptions of Online Learning

	ATE Online Survey	Sloan Foundation 2010 Report
Critical to long-term strategy	89%	74%
Faculty accept value & legitimacy	78%	36%
Online course have same or higher level quality as traditional	83%	79%

In this section of the survey, participants were asked three questions about their perceptions of online learning (Table 2). These questions were inspired by items used in the 2009 Sloan Foundation report on online learning in U.S. higher education (Allen & Seaman, 2010). Large majorities of respondents agreed with each of the following: online courses are critical to the long-term strategy of their program (89%), faculty and instructors in the program accept the value and legitimacy of online courses (78%), and online courses have the same or higher level of quality as traditional courses (83%). Each of these items, on its face, reflects a positive outlook or feelings toward online learning in their ATE funded project. For each of these items, the percent agreeing was larger than the percent of public university respondents agreeing in the Sloan Foundation report.

It is interesting to note the large difference in the percentage of respondents who reported that faculty accepts the value and legitimacy of online courses. More than twice the proportion of participants in the ATE Online Survey agreed with this statement. It is not clear what is responsible for this large difference. Perhaps it is attributable to differences between two-year community colleges in which ATE survey respondents work and the four-year institutions that include graduate programs in which the Sloan Foundation respondents work. It would be interesting to investigate what factors do account for this wide difference in perception. A greater number of ATE respondents also agreed that online learning is critical to their institution's long-term strategy and that online courses are of equal or higher quality than traditional courses, though in both surveys large majorities agree with both statements. Generally there seem to be positive views of the role of online learning among these participants.

Lab-based components

An interesting question regarding online instruction for technical courses is how ATE curriculum developers deal with the lab-based components compared to on-campus courses with traditional lab settings.   Results of the survey (Table 3) show that 10 of 16 respondents have lab-based components within their ATE online courses, and that those 10 programs have a total of 39 courses with online labs, although a few of them are actually delivered at a distance (i.e. satellite campus) instead of online.   There are a wide variety of formats, alternatives, and combinations for delivering lab instruction such as computer simulations (5 programs), having students view a demonstration on related websites (4), viewing webinars (3) and online videos (3), and having students record an activity that is reviewed by the instructor (3). The lab instruction-at- a-distance option includes utilizing separate lab sections, accessing equipment remotely, and reading case studies. The variety of responses indicates a high level of technical resourcefulness among the curriculum developers. Most agree that these are effective learning strategies although they can be more challenging for instructors to monitor and grade, and for students to adapt to the logistics.

Table 3
Perceptions of ATE Online Instructors' Satisfaction
with Online Lab-based Components

	% of Projects that Agree
Online lab-based components are effective for student learning	82%
Students in courses with online lab-based components are able to successfully transfer their learning to real-world application	58%
Online lab-based components are easy for students to use	50%
Online lab-based components are satisfactory substitutes for traditional classroom lab-based experiences	50%
Online lab-based components are easy for instructors to implement	25%

There are 10 potential barriers for implementing online lab components identified from the Sloan Report (2009) which were used for the survey. More than half of the ATE programs reporting (Table 4) agree with the first 5 barriers, and less than half agree with the last 4. The barrier that most respondents agreed with is "instructor time" (80%), followed by "satisfied with current methods" (70%), "not aware of methods and products" (70%), "availability of resources" (70%), "new methods are risky" (60%), and "no online alternatives" (50%).   The barrier mentioned by the fewest participants is "innovative teaching" (17%) followed by "limited technical support"

(31%), "students will not react well" (31%), and "not suited to their subjects" (46%). Considering the fact that these are highly technical courses within NSF's advanced technological education program, it is encouraging that institutions seem to be overcoming many of the barriers of including online or distance laboratories.

Table 4
Perceptions of Potential Barriers to the Use of Online Lab-based Components

	% of Projects that Agree
Instructors have limited time for instructional development	85%
Instructors are satisfied with currently used teaching methods	83%
Instructors are not aware of available methods and products	77%
Instructors believe there is limited availability of resources (e.g. money, tools, hardware) to allow for the use of new methods	69%
Instructors feel using new methods is risky	62%
Instructors believe these methods are not suited to their subjects	46%
Instructors believe there are no appropriate online alternatives to traditional lab instruction available for their subjects	46%
Instructors believe students will not react well to these methods	31%
There is limited support available (e.g. technical or administrative) for new methods	31%
Innovative teaching is a relatively low priority in my school	17%

Motivators/Barriers

Participants were asked to report their perceptions on a series of factors that could impact why their program chooses to offer online courses. These items were taken from the 2007 Sloan Foundation report on online learning in U.S. higher education (Allen & Seaman, 2007). The percent of respondents agreeing that these factors would motivate their program or school to offer online courses can be found in Table 5.

All but two factors were seen as motivators by a majority of respondents to the ATE Online Survey, the exceptions being "Improve Enrollment Management Responsiveness" (44%) and "Enhance Alumni and Donor Outreach" (50%). A higher percentage of ATE Online Survey respondents agreed that 10 out of 12 factors are motivators for offering online courses than did respondents to the Sloan Foundation study, the exceptions being "Increase Rate of Program Completion" and "Improve Enrollment Management Responsiveness". It is interesting to note the large difference between the ATE and Sloan respondents for those that agreed that "Increase Strategic Partnerships with Other Institutions" is a potential motivator; this may be recognition of the fact that technical programs at community colleges serve the dual roles of occupational preparation and transition to university.

Table 5
Perceptions of Potential Motivators for Offering Online Courses

	ATE Online Survey	Sloan Foundation 2007 Report
Attract Students from Outside Traditional Service Area	100%	81%
Increase student access	94%	93%
Increase Strategic Partnerships with Other Institutions	94%	50%
Reduce or Contain Costs	81%	51%
Provide Pedagogic Improvements	75%	71%
Improve Student Retention	75%	66%
Increase the Diversity of Student Body	75%	58%
Optimize Physical Plant Utilization	75%	55%
Strengthen Academic Continuity in Case of Disaster	60%	48%
Increase Rate of Program Completion	56%	72%
Enhance Alumni and Donor Outreach	50%	36%
Improve Enrollment Management Responsiveness	44%	62%

Participants were also asked to report their perceptions on a series of barriers that could impact why their program chooses to offer or not offer online courses. These items were also taken from the 2007 Sloan Foundation report on online learning in U.S. higher education (Allen & Seaman, 2007). The percent of respondents agreeing that these factors could prevent their program or school to offer online courses can be found in Table 6.

Table 6
Perceptions of Potential Barriers for Offering Online Courses

	ATE Online Survey	Sloan Foundation 2007 Report
Students Need More Discipline in Online Courses	87%	81%
Higher Costs to Develop Online Courses	69%	56%
Lack of Acceptance of Online Instruction by Faculty	50%	61%
Lower Retention Rates in Online Courses	38%	56%
Higher Costs to Deliver Online Courses	29%	50%
Lack of Acceptance of Online Degrees by Employers	27%	40%

Only two of these possible factors were seen as barriers to offering online courses by a majority of respondents to the ATE Online Survey. These were "Students Need More Discipline in Online Courses" (87%) and "Higher Costs to Develop Online Courses" (69%). A higher percentage of Sloan Foundation Report respondents agreed that four out of six of these factors are barriers to offering online courses than did respondents to the ATE Online Survey, the exceptions being "Students Need More Discipline in Online Courses" and "Higher Costs to Develop Online Courses". As in the Perceptions of Online Learning section above, it is not clear what is

responsible for this difference, though it could be related to the inherent institutional differences between the views of those that work at two-year community colleges and those that work at four-year institutions.

Course Evaluation

In this section of the survey, participants were asked questions related to the students of the online classes made possible through ATE funding. In regard to s*tudent satisfaction*, the majority of respondents (69%) use an evaluation system as well as anecdotal evidence such as discussions with students, and instructors utilize course feedback to a moderate extent. In general, 8 of 11 respondents believe that students in ATE online courses are satisfied, and 9 of 10 believe that student satisfaction is comparable to on-campus courses (not all participants answered every question). Students reportedly like the access to, and convenience of, online courses and the ability to work at their own pace; one specific benefit mentioned is the fact that web "lectures are archived". Within the department for the ATE project, 29% of respondents indicated that student satisfaction in ATE online courses is higher than in other online courses, 50% say it's about the same, 7% lower, and 14% do not have other online courses.

In answer to the questions on *learning outcomes,* most respondents (73%) believe that students' grades in ATE online courses are virtually the same as on-campus courses, but 13% felt they were higher and 13% lower. In 57% of projects a quarter or more of students do not complete assignments on time, although 71% say it is about the same for on-campus students. In the Sloan report (2009) for those institutions granting associate's degrees 62% feel that learning outcomes in online courses are the same as on-campus courses, 13% said online is superior, and 25% inferior.

A concern frequently mentioned by administrators is student *attrition.* Students in a substantial number of ATE online courses do not finish; the number is about the same for on-campus courses, but somewhat lower compared to other online courses. Most projects felt the number was about the same for on-campus (50%), but the others were split on higher (29%) or lower (21%).   Only about half the reasons given for not finishing a course are related to the online environment, such as students had difficulty with the technical aspects of the course or students were not disciplined enough to work on own; the other reasons for not finishing an online course are related to students with adult responsibilities. Respondents suggested that more technical support and better communications with students would increase retention which may also apply for online courses in general. In regard to the question of student retention in online courses, 28% of administrators from community colleges in the Sloan study (2009) agreed that attrition is greater compared to face-to-face courses, 13% disagreed, and 59% were neutral.   The results of the current study are similar on this dimension to the Sloan report which had a very large sample.

Trends in Online Instruction

The Principal Investigators were also asked a series of questions about general trends in their ATE funded program's online courses. Most (67%) reported an increasing trend in the number of ATE online courses in the past few years, and that the trend is equivalent to the increase in all online courses; the 14 programs that responded to this question are currently offering 41 ATE courses online per semester (mean = 3, range = 0-10). Most also reported an increasing trend in the number of students taking ATE online courses (77%), increasing enrollment per individual ATE online course (64%), and increasing numbers of non-traditional or remote students taking these courses (69%). None of the programs reported a decrease in these trends. Within their departments, the number of students taking ATE online courses compared to other online courses is: ATE is lower (3), about the same (7), ATE is higher (1), and no other program (2). Most also

reported an increasing trend in the number of faculty teaching online (67%), including about a third of new and part-time faculty, which is comparable to the numbers for all online courses.

These trends seem to parallel the development of online education at community colleges in general. The increasing enrollment in online courses exceeds the total growth of students at two-year institutions (Cejda, 2010); this may reach the point that faculty capacity to teach online becomes a constraint because about two-thirds of online courses are taught by full time instructors which is corroborated by this study. Since the preponderance of online education in community colleges is in the liberal arts areas such as psychology, social sciences and history (Allen & Seaman, 2008), it could be viewed as a positive trend that many ATE programs are providing their technical courses—even lab components—online.

Conclusion

The purpose of the study was to explore the current state of online instructional technology use in ATE curricula. Although there has been an overabundance of studies that report trends for online instruction, very little has been targeted at two-year technical programs; and since the ATE projects are the *avant garde* for technical education , the findings may provide some insights for the development of online courses. No broad conclusions should be made due to the small number of programs studied.

First, like the variety of programming, there is a rich mixture of instructional technologies and combinations of formats. Based on the participating sample, there is no totally online program; instead, programs include traditional, online, and hybrid courses which is similar to non-ATE programs. What is significant though is that ATE PIs "accept and value the legitimacy" of online learning at twice the rate of respondents from the latest Sloan report. Even online laboratories are considered an effective learning strategy for 80% of those reporting. In addition 10 ATE programs have a total of 39 courses that contain virtual labs. There is an impressive variety of formats and technologies used for course delivery.

Second, the ATE faculty motivations for utilizing online instruction are largely similar to the Sloan results for all institutions, but where they are different may be due to the fact that the findings are from technical programs at community colleges. For example, "increasing strategic partnerships with other institutions" and "reduce or retain costs" are rated much higher as motivators compared to all institutions. For the potential barriers to developing and implementing online instruction, it may be useful for ATE curriculum planners to have the barriers identified explicitly; in addition there are some issues such as "lower retention rates in online courses" and "lack of acceptance of online degrees by employers" that are not as serious barriers compared to the Sloan sample.

Finally, aspects of online courses in regard to evaluation—student satisfaction, learning outcomes, and attrition—are not substantially different (based on the responses) from other reports which include all post-secondary education. This may be viewed positively because the ATE online courses have more technical challenges yet the program evaluation metrics are comparable to all online courses. Similarly, the growth of online instruction reported by ATE programs parallel the trends for higher education in general even though the ATE curricula are some of the most difficult to develop online. The next step for this line of research is to interview instructors and curriculum developers to get more detailed knowledge of their experiences.

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Faculty Members' Attitudes toward Computer-Assisted Language Learning In Saudi Arabian English Classes

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Abstract

The purpose of this study was to explore the attitudes of English faculty toward computer-assisted language learning (CALL) in Saudi Arabia. Another aim was to find out whether these attitudes are associated with factors like age, qualifications, teaching experience, general training in using computers, training on CALL, and the use of a language laboratory in teaching English. Seventy-five English teachers in higher education participated in this study. A questionnaire was used to collect data. Lab observations were also done to support the data collected. Surprisingly, the study found that faculty teaching English in Saudi Arabia expressed neither positive nor negative attitudes toward CALL. In addition, no clear correlation was found between their attitudes and the proposed variables listed above.

Keywords: using technology in education, computer-assisted language learning, teachers' attitudes, faculty attitudes, CALL, CALL in Saudi Arabia, teaching with technology

Introduction

Myers & Halpin (2002), Yildirim (2000), and Teo (2008) believed that attitudes towards computers and trust in using them in education are two major predictors concerning teachers' future use of technology in classrooms (as cited in Bakr, 2011, p. 308). This led me to agree with what was confirmed by Egbert, Akasha, Huff, and Lee (2011), who said, "Teachers are crucial to the CALL endeavor" (p. 4). Thus, I think attitudes of teachers about using technology in general and CALL in particular should not be ignored when one is considering the learning and teaching process because their attitudes contribute to the success or failure of the teaching process overall. Woodrow (1991) stated that the success of educational programs using computer technology is usually a reflection of the support and attitudes of teachers involved. Ramanair and Sagat (2007) stated that "teachers play a pivotal role in the utilization of computer technology in the classroom" (p. 1). Muellar, Husband, Christou, and Sun (1991) supported this contention.

Prior Research

Many studies related to teachers' attitudes towards CALL have been conducted in the last two decades. Bullock (2004), for example, clearly confirmed that teachers' attitudes toward computers are related to their use of the technology itself. This opinion was strongly supported by Rezaee, Abidin, Issa, and Mustafa (2012) and Kersaint, Horton, Stohl, and Garofalo (2003). On the other hand, if teachers have negative attitudes about using CALL, this should have a negative effect on the success of a CALL program. Hand in hand with this, some researchers claim that the attitudes of teachers towards using technology in general and CALL in particular have an impact on the students' attitudes toward technology and CALL (Berner, 2003). Thus, it is my opinion that CALL along with ICT are effectively used when teaching foreign languages in general and English in particular.

Some studies have shown that teachers are not adequately prepared to adopt the latest technology in their pedagogy. Egebert and Pauls (2002) clearly supported this contention, stating that any

pre-service training program for teachers should prepare teachers on the use of technology in their classrooms. Zou (2007, 2011) clearly supported the idea that teachers should be given more training on using technology effectively and efficiently, which will improve their teaching. Furthermore, according to Mcalister, Dunn, and Quinn (2005), technological training should be one of the components of any program for teacher preparation. In addition, introducing a technology course to such a program should build the confidence of future teachers to use technology with no fear. This belief is shared by other researchers, such as Christensen and Knezek (1996).

Moreover, other researchers like Birisci, Metin, and Karakas (2009) and Reed, Anderson, Ervin, and Oughton (1995) as cited in Bordbar (2010), have stated that the technological training course offered to teachers should improve teachers' attitudes toward using such technology, which also builds their confidence. Sadik (2006), Erven, and Oughton (1995) as cited in Bordbar, 2010), stated that one or more courses related to technology may be adequate to build teacher confidence and cause them to hold positive attitudes toward the use of technology in teaching. This opinion is shared by Fraze, Fraze, Baker, and Keith (2002). Fisher (2000) stated that teachers holding positive attitudes toward the adaptation of technology in teaching are those who are interested in using technology. This means that there is a clear correlation between teachers' attitudes and their success in adopting technology in teaching. However, this opinion was contradicted by Alshumaimeri (2008) who found that teachers holding positive attitudes toward technology do not necessarily use technology effectively in the classroom.

Teachers' positive attitudes toward technology can improve the achievement of students in their classrooms. According to Alshumaimeri (2008) "attitudes of teachers play a prominent role in educational interaction as well as instructional choices and as such are fundamental in examining the outcome of technological integration in the classroom" (p. 31). This conclusion is supported by other researchers, such as Albion and Ertmer (2002); Becker, Ravitz, and Wong (1999); Cavas, Cavas, Karaoglan, and Kisla (2010); and Pajares (1992). Levin and Wadmany (2006-2007) emphasized that a clear focus on teachers' attitudes toward technology is a key factor in supporting teachers' learning. Abu Qudais, Al-Adhaileh, and Al-Omari (2010) clearly indicated that the faculty's attitudes about using technology have an important role to play in the educational setting.

Other researchers found that the attitude of teachers is a key factor in the successful adaptation of technology in the instructional setting (Abas, 1995b; Blankenship, 1998; Isleem, 2003). According to Albirini (2006), who quoted Christensen (1998), teachers' attitudes towards computers affect not only their own computer experiences but also the experiences of the students they teach (p. 365). This leads to the conclusion that the relationship between teacher's attitudes and the success of student learning and the teaching process is clearly established. This means that those who lack positive attitudes toward using technology probably lack knowledge and skills related to computers. This opinion is strongly supported by Otaiwe (2002). Additionally, according to Baylor and Richie (2002), technology should not be used unless teachers or faculty members have the appropriate knowledge and skills to do so. Several researchers found clear evidence that teachers' attitudes towards technology are associated with their training (Becker, Ravitz, & Wong , 1998); Zapata, 2004). Gobbo & Girardi (2001) also stated that teachers' training is a strong factor that contributes to the use of technology in the classroom and that teachers' experience is also a significant indicator that they will have positive attitudes toward technology. This is to say that more experienced teachers are more aware of the use of technology in teaching.

The Study

As stated earlier, the purpose of this study was to explore Saudi Arabian teachers' attitudes toward using CALL in English classes. Another purpose was to discover what factors may be associated with teachers' attitudes, such as age, teaching experience, computer training, training to use CALL, and the use of the language lab in teaching.

Participants and Instruments:

I wanted to collect data from as many faculty members in Saudi Arabia as possible and contacted ninety four faculty members who teach English in institutions of higher education via email. All were male, as it was difficult to approach females due to cultural restrictions in Saudi Arabia. The people I approached came from different backgrounds and have various qualifications. There were 72 respondents within a period of one week. It is worth noting that potential participants required more than one reminder to return the questionnaire. In addition, I requested that the managers of departments in which these people taught write to them, encouraging them to return the questionnaires. This is unfortunately standard behavior in some cultures in which people do not seem to understand the importance of research.

A questionnaire was the main tool used to gather data. Tracing previous studies that measured teachers' attitudes, I discovered that a large number of them adopted questionnaires for this purpose. I adopted a questionnaire designed by Alshumaimeri in 2008 to measure attitudes toward technology among English teachers. Respondents answered questions using a five-point Likert Scale (Strongly Agree (5), Agree (4), Not Sure (3), Disagree (2), Strongly Disagree (1)). (See Appendix A.) In part one, I collected details about participants' backgrounds and demographic information using an instrument called The Ohio State University Attitudes toward Computer Technology as adopted by Albirini (2006). It includes variables such as age, teaching experience, qualifications, and training in using computer. On the other hand, the variables of training on CALL, and the use of a language laboratory in teaching were taken from Alshumaimeri. The second part, designed by Alshumaimeri in 2008, is comprised of 24 items measuring variables related to general feelings towards using CALL. A cover letter detailing the purpose of the study was attached to the questionnaire in order to make respondents fully aware of why I was doing the study. I adopted a factor analysis in order to ensure that the questionnaire was reliable. Cronbach's alpha coefficient was then obtained (.784), which Pallant (2005) claimed is ideal.

I also observed a few number of faculty using the computer in their classrooms without disrupting their teaching sessions.

Questions Used in the Study

Two questions were addressed in this study:

1. What are the attitudes of faculty in Saudi Arabia toward computer-assisted language learning (CALL) in English classes?

2. Is there any correlation between faculty member's attitudes and other variables, such as age, qualifications, teaching experience, training in using computers, training to use CALL, and the use of the language laboratory in teaching?

Data Analysis

The data was analyzed using the SPPS package in order to get answers to the questions posed in the study. A descriptive analysis was used to answer question one. This included mean scores and standard deviations. For question two, a T-Test was used in order to see whether there was any correlation between the teachers' attitudes and the variables listed above.

Results

As disclosed in Table 1, the majority of faculty respondents were aged 24-49 (34.7%) followed by those aged 30-39 (33.3%). Those aged 50-59 were in the third rank (19.4%), followed by those in the age group 20-29 (8.3%). Only 3 respondents (4.2%) were 60 and above.

Table 1
Frequency and Percentage of Faculty Age

Age of Faculty	Frequency	%	Mean	Std. Deviation
20-29	6	8.3		
30-39	24	33.3		
40-49	25	34.7	2.78	.996
50-59	14	19.4		
60-Over	3	4.2		

Regarding teaching experience, Table (2) reveals that the majority of the participants indicated that they have 6-10 years of teaching experience (27.8%), followed by those with 11-15 years of experience (25.0%). Those with over 20 years of experience were in third place (22.2%), and those with 1-5 years made up the smallest group (8.3%).

Table 2
Frequency and Percentages of Faculty According to Teaching Experience

Years of Teaching Experience	Frequency	%	Mean	Std. Deviation
1-5	6	8.3		
6-10	20	27.8		
11-15	18	25.0	3.17	1.289
16-20	12	16.7		
Over 20	16	22.2		

When participants were questioned about their qualifications, the majority of them indicated that they hold an MA (52.8%), followed by those with a BA (52.8). Six respondents held a PhD (8.3%), and only one member held another type of degree (1.4%).

Table 3
Frequency and Percentages of Faculty According to Qualifications

Qualifications of Faculty	Frequency	%	Mean	Std. Deviation
BA	27	37.5		
MA	38	52.8		
PhD	6	8.3	2.74	.671
Others	1	1.4		

As far as training on using a computer is concerned, as disclosed in Table 4, the majority of the participants (79.2%) indicated that they had attended such training. On the other

hand, most of them (58.3%) indicated they had not attended CALL training. This reaction leads to the conclusion that the amount of training received is inadequate.

Table 4
*Frequency and Percentages of Faculty Responses
to Question Concerning Computer Training*

Scale	Frequency	%	Mean	Std. Deviation
Yes	57	79.2		
No	15	20.8	1.21	.409

Table 5
Frequency and Percentages of Faculty Who Received CALL Training

Scale	Frequency	%	Mean	Std. Deviation
Yes	30	41.7		
No	42	58.3	1.58	.496

The last question was about whether the participants use the language lab in the English class. As revealed in Table 6, the majority of them (58.3%) answered no, which I consider alarming.

Table 6
Frequency and Percentages of Respondents Who Use the Language Lab

Scale	Frequency	%	Mean	Std. Deviation
Yes	16	22.2	1.82	.565
No	55	76.4		
5	responses	(1.4%)		missing.

Now, we turn to the results of the study regarding the two main questions it addressed.

Question One: *What are the Attitudes of Faculty in Saudi Arabia toward Computer-Assisted Language Learning in English Classes?*

To determine participants' attitudes, they were asked 24 questions related to their general feelings about CALL in their English teaching setting. The mean score of 2.1 was supported by the standard deviation .273, as shown in Table 7, and it reveals that faculty attitudes towards computer-assisted language learning falls in the middle of the positive and negative scale, which means their reaction was neutral. This result was unexpected, and, in fact, this result is different from results of other studies, which showed that professional teachers usually have positive attitudes towards using technology in their classrooms.

My observations during class sessions in the language laboratories also confirmed that instructors were not fully aware of how to use the technology in the lab. Faculty members were observed struggling in their attempt to use computers in teaching their students. They attempted to teach their students via CALL, but their efforts were not successful. It seemed obvious that faculty had not had enough training in the use of CALL, which probably explains their lack of awareness of the essential role played by technology in teaching and their reliance on the old-fashioned techniques of teaching.

Table 7
Overall Attitudes of Faculty toward CALL in English Class

Scale	Mean	Std. Deviation
Faculty's Attitudes toward CALL	2.1	.273

Question Two: *Is There Any Correlation between Faculty Attitudes and Other Variables?*

In order to answer this question satisfactorily, I used the Pearson Correlation T-Test. I found, as shown in Table 8, that none of the variables (age, qualifications, teaching experience, training in computer usage, training to use CALL, and the use of the language laboratory) was correlated with the attitudes of faculty toward CALL. However, surprisingly, the training on CALL had a negative correlation rather than a positive one, although the level of significance was not high. I interpreted this to mean that those with less training on CALL had more positive attitudes. These results are not in line with previous research, which found otherwise. This could be due to a difference in expectations or maybe the different cultural setting.

Table 8
Pearson T-Test for the Correlation between the Attitudes of Faculty and the Variables

Variable	Mean	Std. Deviation	P. Value	Sig.
Age	**2.78**	**.996**	**-.029**	**.806**
Teaching Experience	**3.17**	**1.289**	**-.079**	**.508**
Qualifications	**2.74**	**.671**	**-.043**	**.718**
Computer Training	**1.21**	**.409**	**-.003**	**.978**
CALL Training	**1.58**	**.496**	**-.259***	**.028**
Use of Language Lab	**1.82**	**.565**	**-.045**	**.708**

Correlation is significant at the 0.05 level (2-tailed).

Discussion

The results outlined above show that the faculty had neither positive nor negative attitudes toward CALL in teaching English, and they seemed to have no full awareness of the significance of technology in education, which caused them to underestimate its role in their classrooms. Their attitudes were based on an understandable judgment that resulted in making them uncertain that computers are a valid educational tool. As stated above, these results do not corroborate the results obtained by other researchers worldwide (Abu Qudais, Al-Adhaileh, & Al-Omari, 2010; Albirini, 2006; Al-Shmmameri (2008); Al-Zaidiyeen, Mie, & Fook (2010); Bakr, 2011; Bordbar , 2010; Mukti, (2000); Rezaee, Abidin, Issa, & Mustafa (2012); Tilfarlioglu & Unaldi (2006); Willis & McNaught (1996), among others.

In his research on teachers' attitudes in Egypt, Bakr found that teachers had positive attitudes towards the computer. AlBuraini (2006) in his study related to teachers' attitudes towards information and communication technologies in Syria found that a large proportion of teachers had positive attitudes towards using technology in their teaching setting. According to him, his results came as a reaction to the belief that teachers thought of the computer as a tool that plays an essential role to improve their classroom teaching. Abu Qudais, Al-Adhaileh, and Al-Omari1 (2010) in their study related to Jordanian senior faculty members' attitudes towards using information and communication technology when teaching university students found that their subjects had positive attitudes towards using technology, which led the majority of them to emphasize their willingness to be trained to use such a technology. Furthermore, Rezaee, Abidin, Issa, and Mustafa (2012), whose research was devoted to TESOL in-service teachers' attitudes towards computer use, revealed that teachers were largely positive about using technology in teaching. Additionally, the same concept was explored in Tilfarlioglu and Unaldi's study (2006) related to faculty attitudes towards computer-assisted instruction at the University of Gaziantep. Their study found that faculty who were knowledgeable about using computers expressed more positive attitudes than those without such awareness. Furthermore, Bordbar (2010) in his study concerning English teachers' attitudes toward computer-assisted language learning found that almost all teachers expressed positive attitudes towards using them in their teaching. He emphasized that "the results also point to the importance of teachers' vision of technology itself, their experience with it, their level of computer skill and competence, and the cultural environment that surrounds its introduction into schools and English institutes in shaping their attitudes toward computer technology" (p. 27). Mukti (2000) revealed the same reaction among teachers he studied in Malaysia who had positive attitudes towards the use of computer in classes. Willis and McNaught (1996) discovered the same feelings in their study evaluating computer-based learning in higher education. Their results indicated that teachers had positive attitudes toward technology. However, teachers participating clearly reported that their modest backgrounds and training did not allow them to use computers properly. Bordbar (2010), working in a similar setting as the one for this study, found positive attitudes among teachers in Iran toward technology in their teaching setting. However, the Iranian teachers were not certain that computers would help them reach the goals of the program in which they teach. More alarmingly, his study indicated that despite the teachers' positive reactions, they did not schedule much time for their students to use the computer. Finally, Al-Zaidiyeen Mei, and Fook (2010), studying teachers in Jordan, clearly found that although a majority of them did not use technology, their attitudes towards its use were positive.

In Saudi Arabia, where a limited amount of research about this topic has been undertaken, Alshumaimeri (2008), in his study entitled "Perceptions and Attitudes toward Using CALL in English Classrooms among Saudi Secondary EFL Teachers," found positive attitudes among a great majority of English teachers towards employing CALL in classrooms. His study further showed that female teachers expressed more positive attitudes in this regard than their male counterparts. However, overall, he found that "teachers who have positive attitudes towards ICT itself will be positively disposed towards using it in the classroom" (p. 41). He expected the same to be true of all Saudi Arabian teachers. Another interesting point in Alshumaimeri's findings was that the teachers' attitudes facilitated the students' attitudes. He stated, "While the novelty of computers in the English classroom in Saudi Arabia is likely to bring out mixed opinions on the use of IT tools, 56.8 percent of respondents strongly agreed that the CALL approach more readily drew the attention of the students. Greater student interest will likely encourage the teachers to continue embracing IT in the classroom in order to optimally facilitate learning" (p. 42).

The neutral attitudes expressed by participants in this study are unusual, as most faculty worldwide have positive opinions about using technology in teaching all subjects, especially foreign languages. However, the unexpected results might be explicable. Perhaps teachers have

not had enough training on CALL, so they are not fully aware of the latest pedagogical theories concerning the importance of using technology in teaching. In addition, they are so used to using the old-fashioned techniques that they may find it difficult to accept the rationale offered by experts on technology. One more justification could be that most institutions are not serious about the adoption of technology, which could make faculty discouraged about expressing their feelings toward technology. In addition, some faculty may not have enough support from their institutions encouraging them to use technology in teaching, which might cause them to be uncertain about its utility. As a matter of fact, in a culture like Saudi Arabia's, many people, even professionals, believe that the latest technology cannot outweigh old-fashioned teaching techniques. This could be the result of the total absence of training and courses related to using technology in the pre-service programs and in-service programs. A further justification may be that the shortage of computer resources and teachers' lack of computer competence might have contributed to their neutral attitudes. Today, Saudi universities make all faculty, even those who are technologically incompetent, eligible for a monthly computer allowance equal to 20% of their basic salary, on the condition that they set up a personal webpage available online. This foolish policy ensures that most faculty members do not bother to attend courses on how to use the computer and instead simply fulfill the requirement of having a webpage by asking a colleague or a friend to design one. This is regarded by many as a corruption that has caused most faculty members not to be serious about learning computer usage, either for their personal use or for teaching purposes.

As far as the variables associated with faculty' attitudes are concerned, this study found that none of the variables (age, teaching experience, qualifications, training in computer, training on CALL and the use of the language lab in teaching) contributed significantly to a correlation of the participants' attitudes toward CALL. Although an odd negative correlation for the variable "training on CALL" (-.259*) was found, such a correlation is regarded as not having much weight since it is negative. Overall, the absence of solid correlations between the attitudes of faculty and the variables mentioned above are not aligned with findings of previous studies conducted in the field (Albirini, 2004; Alshumaimeri, 2008; Cavas et al., 2010; Liu (2009; Sadik, 2006, among others). However, regarding teaching experience in particular, the only research result that matches the findings of this study occurred in the one undertaken by Bakr (2012) where no correlation was found between the teachers' attitudes and the variable of teaching experience. However, the overall absence of correlations in the present study could be attributed to the assumption regarding differences concerning the expectations and perceptions of faculty along with the differences in the academic institutions' policies and requirements. The cultural factor may also be relevant.

Conclusions and Recommendations

This study was conducted in order to determine the attitudes towards CALL of faculty members teaching English in Saudi Arabia. Another objective was to explore whether there are any correlations between these attitudes and the variables associated with them.

The results of the study revealed that the attitudes of faculty teaching English towards computers were unclear or neutral. This suggests that participants do not yet understand that their attitudes play an essential role in boosting the quality of their teaching. Their attitudes are that technology is not important in the field of education in general and teaching English in particular. This was unexpected because most teachers today are fully aware of the significance of technology and its impact on their teaching. Overall, the findings of the study, as detailed in the discussion section, were not aligned with other research concerning using technology in education. The other conclusion was that none of the variables posed in the study had any clear correlation to the general attitudes of faculty.

Although the study revealed that faculty hold neither positive nor negative attitudes toward computer-assisted language learning in teaching English in Saudi Arabia, I recommend implementing CALL in Saudi Arabia. In order to change attitudes towards CALL, faculty should be given sufficient training on CALL to meet their needs. One more point is that the pre-service English training programs in Saudi Arabia should include courses regarding the use of CALL in their curriculums since most EFL programs in the country do not have this facility. In Saudi Arabia today, there are 24 public universities, most of which run pre-service programs for teachers of English, but to my knowledge, these programs do not include any training or courses related to CALL.

I also recommend that when CALL is introduced, teachers should be given more opportunities to express their opinions and views about its implementation. In addition, programs to develop faculty awareness of CALL should be enhanced. These particular points were also raised by one of the researchers in Saudi Arabia, Alshumaimeri (2008) who stated that "teachers should also be afforded the opportunity to discuss their opinions as they develop their own approaches toward the integration of technology into the curriculum. Staff development programs in support of teachers in the process of orienting to technological advances in EFL classes also must be considered if learning is to be meaningful and effective" (p. 42).

Moreover, I recommend that during recruitment of faculty, attention should be paid to those having knowledge of CALL. This will save time for both the institution and the faculty member.

Finally, I think more research should be conducted in Saudi Arabia and that its findings be compared with those of this study.

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Appendix A

Study Instrument Adopted from Alshumaimeri (2008)

Cover Letter

Dear Colleague,

The main purpose of this questionnaire is to explore your attitudes toward Computer-Assisted Language Learning in your teaching setting. The questionnaire has two parts. Whereas part one gives background information, part two measures your attitudes toward CALL. Kindly read the directions carefully and provide your responses candidly in the format requested.

Your participation is highly appreciated.

Thanking you,

Sultan A. Arishi

Please indicate your response to the following questions by checking the appropriate box:

Part One

Background Information

1-What is your age?

A 20–29 ☐

30–39 ☐

40–49 ☐

50–59 ☐

60 and over ☐

2-Including the current year, how many years have you been teaching English?

1–5 ☐

6-10 ☐

11–15 ☐

16–20 ☐

Over 20

3-What is your highest completed academic degree?

Teacher Certificate

Bachelor's

Master's

PhD

Other

4- Have you ever attended any training course, workshop, or seminar on using computers?

Yes   No

5-Have you ever attended a CALL training?"

Yes   No

Do you use the language lab for teaching English?"

Yes   No

Continued….

Part Two:

Please indicate your reaction to each of the following statements by circling X to the number that represents your level of agreement or disagreement with it. Make sure to respond to every statement.

No	Item	Strongly Agree 5	Agree 4	Not Sure 3	Disagree 2	Strongly Disagree 1
1	Using computer helps in teaching English Language in attracting the attention of students					
2	Using computer facilitates teaching English Language for the teacher					
3	Using computer helps in teaching English Language in raising the students attainments of academic matter					
4	Teaching by using computer helps in facilitating the subjects of English Language to the students					
5	Using computer in teaching English Language affects the role of the teacher negatively					
6	It is possible to use computer in teaching English language by all teachers of					

	English language					
7	Using computer in teaching English language is one of the effective means of teaching					
8	Using computer in teaching English Language is not costly					
9	I prefer to use computer in teaching English Language					
10	Using computer in teaching English language complicates the educational process					
11	Using computer in teaching English language improves the capabilities and skills of the teacher					
12	Using computer in teaching English language is considered a waste of time					
13	Using computer in teaching English language helps the teacher to give the student the correct information within a short time and quickly					
14	Using computer in teaching English language leads to uselessness of the English teacher					
15	Using computer in teaching English language helps in saving money and effort of the teacher					
16	I look forward to have using computer in teaching English language as obligatory					
17	Computer helps teachers of English language in producing various educational media					
18	Using computer helps in enforcing the English language learning of students					
19	Using computer helps increasing enthusiasm and effectiveness of student to lean English					
20	I enjoy using the computer when teaching English language					
21	I am sure that using computer will help students having difficulties in learning English					
22	Using computer in teaching English language gives more roles to teachers of English language					
23	Using computer in teaching English language will fail as the language labs previously failed					
24	I don't see any need for using computer in English Language					

Should you have any comments, please do not hesitate to state them below:

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Intelligent Adaptive Presentation and e-Testing System
based on User Modeling and Course Sequencing in Virtual Classroom

Nidal A. M Jabari, Mochammad Hariadi, and Mauridhi Hery Purnomo

Indonesia

Abstract

This paper introduces a solution for the problem of dealing with the student personalization in e-learning and virtual classrooms. Dual problem relating to Learning Objects (LOs) presentation in the best appropriate way to the student and conduct the tests in a way that allows him to answer according to his cognitive style and giving him more trials to answer. IMS SS describes the organization of LOs in a hierarchical manner, as a tree allows LOs to be delivered in sequence that is more verifiable. Petri Net offers the ability to use conditions within the learning process and then respond to the result of that condition. The learning environment is divided into three layers: DM, AM and RM. Through the relationship and interaction between these three layers, we can control the sequence and organization of the learning process. A Student Model is the core of adaptive learning since it determines the behavior of the system adaptive process. It has been studied as the most important student characteristics required in the adaptive process mainly the different patterns of cognitive styles. This paper discussed the design of the adaptive learning process basing on these concepts. Integrated design provides learning activities either LOs or tests in sequence and adapted to the student cognitive style. This system evaluates the knowledge of the student beside his new cognitive style which should be used in the next concept presentation. The paper discusses also the full environment of this system through the design of models required to achieve the objective as well as services, infrastructure, and some additional services that can get benefit from the system such as adaptive chat room.

Keywords: adaptivity, cognitive style, domain, exercise, learning object, stereotype.

Introduction

In recent learning systems, technology is strongly involved in the pedagogical process, especially in the virtual classroom. Virtual classrooms contain two main components: the first is the lecturer's presentation, the second is student evaluation techniques. Most learning systems manage these two processes in a traditional way. Both the lecture-presentation and te evaluation process are introduced in the same way for all students. Personal differences among students, especially the student's preferred way of study, are not considered in these systems.

Data about the student is needed to build a student model that estimates the knowledge level and learning style [2] of the student. This evaluation will be reflected to adapt the presentation of learning objects. In this paper, we introduce technical solutions for adaptive learning based on two sources of student data. The questionnaire answered by the student at the beginning of the course, which will give an initial stereotype of the student. Initial data about the student is important to tell the system how to deal initially with each student in a private manner. Later the system should be able to update the student stereotype dynamically during the learning process. The exam that follows each concept presentation is used to evaluate student knowledge and new aspects of cognitive style.

An integrated model for adaptive e-learning system is an important factor. It is important to keep models in the system separated from the system processing. Data storage, domain and user models are kept separately from the system to allow other systems which need to use SM and DM to use them independently.

The rest of the paper is the following, section for 2 discusses related work, section 3 discusses our model, section 4 discusses the conclusion and future work, section 5 is for acknowledgement.

Related work and background

Adaptive course sequencing:

Learning activities in e-learning are in their nature multiple, simultaneous and sequential [6]. Some are learning objects (LOs) while others are exams, quizzes or other learning media. Through this concept we can get different paths within the learning process for each concept. This sequence has been studied by Bailey so-called IMS SS as seen in Figure 1.
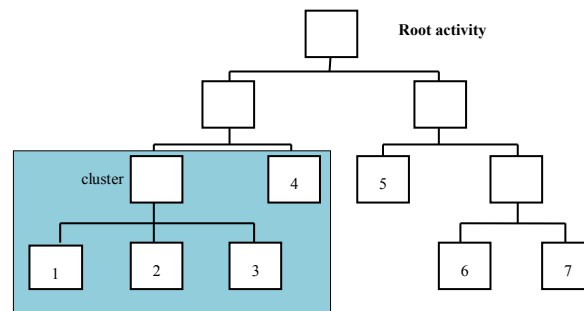

Figure 1: Sequencing activity tree

Getting different paths in one group or to get different patterns of formative assessment is suitable for applications in different areas of e-learning for each different student with different characteristics. IMS SS can decide the next step possible to be either LO, examination, quiz or other learning media as seen the tree cluster in Figure 1. The main objective of sequencing is to get the best and most appropriate learning strategy to the learner. Because learning activities constitute a hierarchy in composition, we are able to form different models of learning activities. This can be done through. 1) repeated random selection of LO until the student gives evidence of knowledge mastery. 2) selection of the next LO. 3) Basing of the student profile a group of LOs. 4) In goal oriented systems, the goal will determine the set of LOs which meet the current goal and discover the learner skills [8]. A parent activity and its children are referred to as a cluster of activities.

Course sequencing behavior model presented by Petri net:

Petri Net is a directed graph that consists of nodes representing transitions such as an event and places such as the conditions expressed in the circles. Directed arcs reflect the event before or after the condition. Petri Net has modeling tools such or alternative modeling standards and provides graphical notations like choice, process, iteration, and concurrent execution. However, Petri Net has a mathematical definition for the implementation in addition to well proven theories [9]. Madjarov and Betari studied this model through a cluster of sequential behaviors. They found that the breakdown of learning materials have to deal with the various activities which are delivered to the learner as managed sequences.

Madjarov and Betari introduced a model based on Petri Net in the form of a hierarchical structure of learning activities (LOs) [5]. Learning material is organized as a cluster tree and the sequence

in it depends, at the disposal of the learner or the response to exercises designed to determine the level of the student, which can be determined through the examination at that stage or level. Service provided to students through LOs are more suitable to the level of knowledge of the student. This form has more dynamism in the sequential behavior and sequencing rules of schema, which ensures more integration of various types of LOs in the sequencing rules of schema [5]. The course cluster sequencing is illustrated in figure 2.
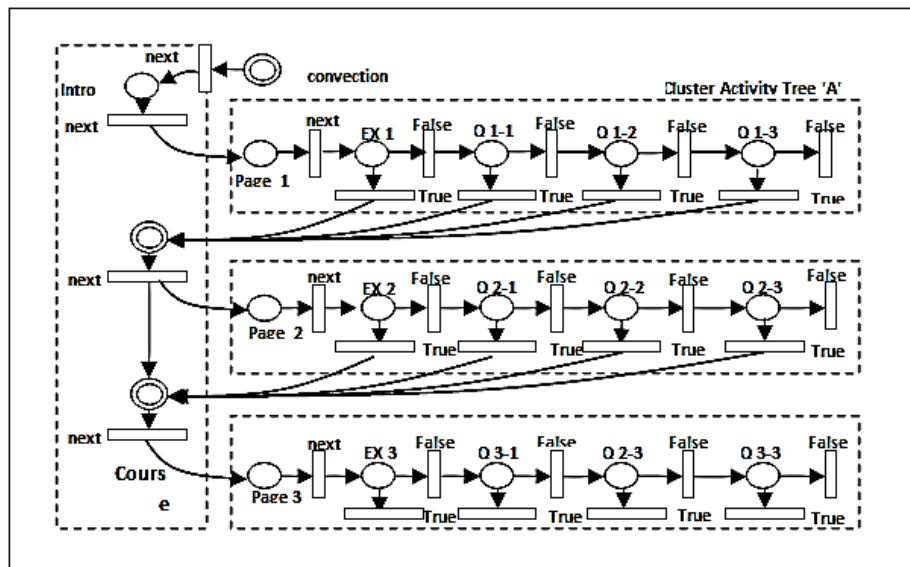

Figure 2: course cluster sequencing behavior presented by A Petri Net

In our model, we can get the benefit from this concept, as we face many of the conditions and the transition from situation to situation within the learning process, so this model will be a main pillar in our model.

Learning model based on Pedagogy:

The aim of learning is to get knowledge. To acquire knowledge, the learning activities such as learning content or evaluation activity must be supported by some of the resources. Zhang in [1] divided the learning process into three layers. Each layer achieves a certain objective. The first layer related to knowledge structure for the students called the Domain model (DM). In most cases, the domain is divided into several parts from the top to the lowest. For example: division of the unit into the subunit into the concept. The concept is the smallest learning unit may be atomic or composite of several concepts. The Domain model is not the storage structure of the learning materials, but the term only about the structure of the LOs. The second level related to the activity structure called activity model (AM). Each concept in the domain, there must be a range of activities supporting it.

These activities may be a review of prior knowledge, learning content or assessment. The third layer of concepts related to the resource description called resource model (RM). This layer represents the learning materials of the course. Adaptation strategy based on these three layers. But cannot be adaptive if we don't focus on information related to the student which is called student model as seen in Figure 3.

LOs are made up of concepts as previously mentioned. These concepts must have a clear relationship between them. For each concept there are a range of activities related to this activity and strategy for the selection of these activities.

As we will see in our proposed model we also build our conceptual model on these three layers. The interaction between these three layers will be described clearly.
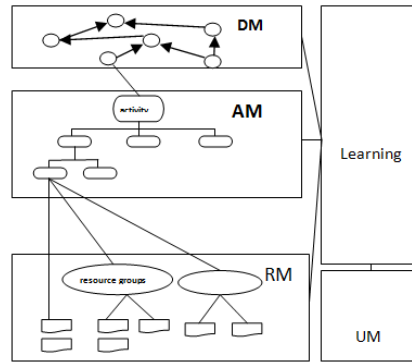
Figure 3: the learning model based on pedagogy

Cognitive styles

As mentioned earlier, the student model is the main pillar in the adaptive learning process. Because the system must be acting according to the characteristics of a student known already to the system. This Model generally has inferred information [3, 4]. One of the most important characteristic that should be taken into account is the student cognitive style. Many researchers discussed in this area to get the main cognitive styles of the student. In [10] defined cognitive style as the way of the student learning by which the learning materials is displayed so that the student should be in the best degree of comprehension and understanding. The system should provide learning materials basing on the cognitive style for the student to ensure maximum knowledge to him. As stated in [11], the most important cognitive styles are:

Verbalisers "consider the information they read, see or listen to, in words or verbal associations"(13).

Imagers on the other hand, when they read, listen to or consider information, experience "fluent spontaneous and frequent pictorial mental pictures" (13).

Analytics according to Riding will take a structured approach to learning and will prefer in r information that is set out in a clearly organized way.

Wholists on the other hand will not habitually take a structured approach and may therefore need help in imposing a structure on some unstructured situations or experiences formation that is set out in a clearly organized way.

Intelligent adaptive presentation and E_testing system based on student modeling and course sequencing

Our proposed system will be also web based oriented, web server with database system. To take advantage of previous studies that have been discussed earlier in this paper. The proposed system will work in integrated environment of the last discussed studies. Selecting path of learning objects according to the student cognitive style which is saved and updated dynamically in the student profile. In our model we consider only 3 types of cognitive style. It is possible to use more types when required. They are verbal (ver.), visual (vis) and analyst (ana). They are represented in the set < ver, vis, ana >. Sequences of LOs and other activities are organized in a tree form. Visiting the course content starting from chapter until the smallest entity the concept. The student will be given a several chances to answer the same exercise. The exercise will be introduced in several patterns to let the student have more chances to choose the right answer. First trial always should be in the current student cognitive style while the others will be in different styles in order to estimate the new student cognitive style dynamically. Using (condition / event) state in Petri Net to decide the next step after the answer of the student. Basing on exam results, the student will be directed to the next concept or keep trying to understand the current

concept. Determining the exact student knowledge level about the current concept is obtained through completion of the exam and get a score. This will serve for two goals, first the evaluation of the student knowledge academically, second to provide information to the student profile, this information beside other information as seen in [7] will serve for adaptive learning and other systems need information about the student like adaptive discussion room. The overall view of the system is shown in Figure 4. The system consists of three layers, Domain model, Activity Model and resources model. A brief description for each model in the following points:
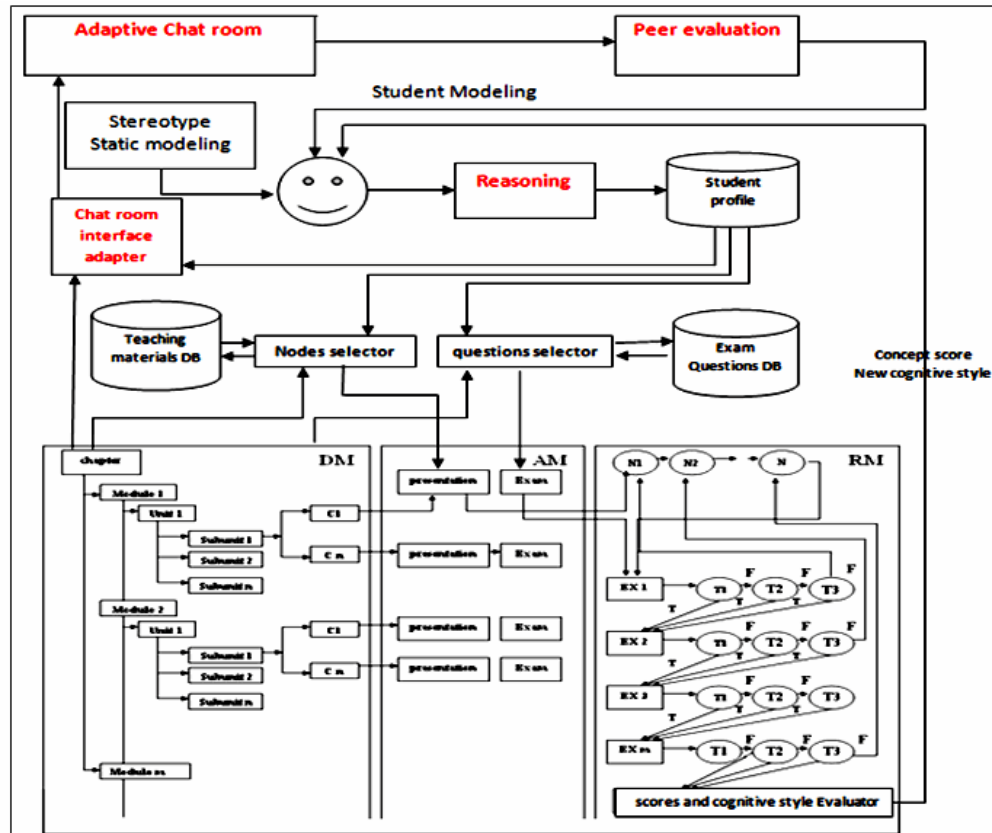
Discussion:

Domain Model:

Domain model in as described in [7] is a set of chapters (CH), each chapter consists of a set of Modules (M), module is separated into several unites (U) and unit to several subunits (SU), the subunit has several concepts which represent the learning objects of this subunit, the student should follow these concepts one by one in sequence to achieve the require knowledge required for this subunit. Each concept should be accompanied with expert estimation of the required knowledge to pass this concept in addition to the cognitive style related to this concept. In such a way we can define the concept as the set < name, path, expert level, cgs (ver, vis, ana) >. For example we can define abacus concept in 101 course as the tuble < abacus, intro-counting-machines, 77%, ver >. Expert knowledge serve to decide if the student passes the concept or should be keep studying the same cocept. Cognitive style serves to decide how to present the concept LOs to the student. The Domain model doesn't have any teaching materials. It is only describes the structure and the relationships between course components. Domain model will provide information to several modules in the system. Nodes selector, Question selector, Chat room interface adapter. These modules will be discussed later in this section.

Student Model:

Student Model is the core of the learning adaptive systems and ITS. It will provide the required data for adaptation techniques beside the domain model for both presentation and exam agent. Student model actually consists of several sources of data in our system we concentrate in two sources:

1. Static student modeling (Stereotype):

A stereotype is a popular belief about specific types of individuals. Stereotypes are standardized and simplified conceptions of groups based on some prior assumptions. In our system, there are several characteristics and preferences that can be considered in the system which affect the behavior of the system. These preferences are called domain independent. This data is mostly static and is not changeable during the instructional process. For example and not all we can consider preferable time of learning within the day or night, sex, age, background, skills, etc. This data can be gathered directly from the student via a questionnaire, and used to classify the students into groups called stereotypes. Then store this data in the student profile database. In this paper we will consider only one entry in the stereotype, the student cognitive style as the student use the system for the first time.

2. Dynamic Student modeling (Overlay Model):

Once the student starts to use the system his data will be gathered using dynamic modeling. Dynamic modeling has two entries, one related to student the knowledge estimation through exam evaluation and peer evaluation. The other is related to the student new cognitive style. These both modeling processes are described in the following sections.

Activity Model (AM):

AM will be the second process right after the student login to the system. For each concept there are two or more activities. In our model we used only two activities, first is the Presentation Agent (PA), second is Exam Agent(EA) . AM will have mainly the following functions:

Determine Last studied concept score from SM.

Determine Expert minimum score accepted from Domain model.

Compare the student score with the expert minimum accepted score and determine if the student can move to a new concept or repeat the same concept (overlay model).

Determine the new concept to be taught from domain model (current or new).

State the student current cognitive style from SM.

Generally AM will organize the relationship between DM and RM, in such way we can control the sequencing of the learning objects in addition to their required exams in correspondent with the sequence of the DM concepts sequence.

PA will have the function of generating the query to retrieve the appropriate nodes to built the LOs presentation for the current concept and passing this query to the Nodes selector to retrieve the required nodes. Then gives an order to the resource model to adjust the selected nodes and present them as pages to the student. PA input and output described in Figure 5.
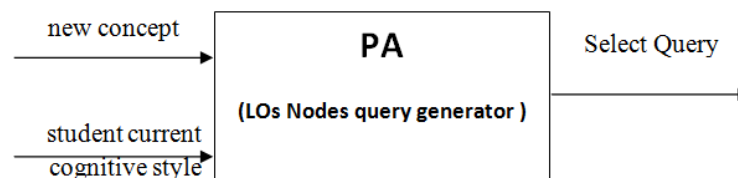

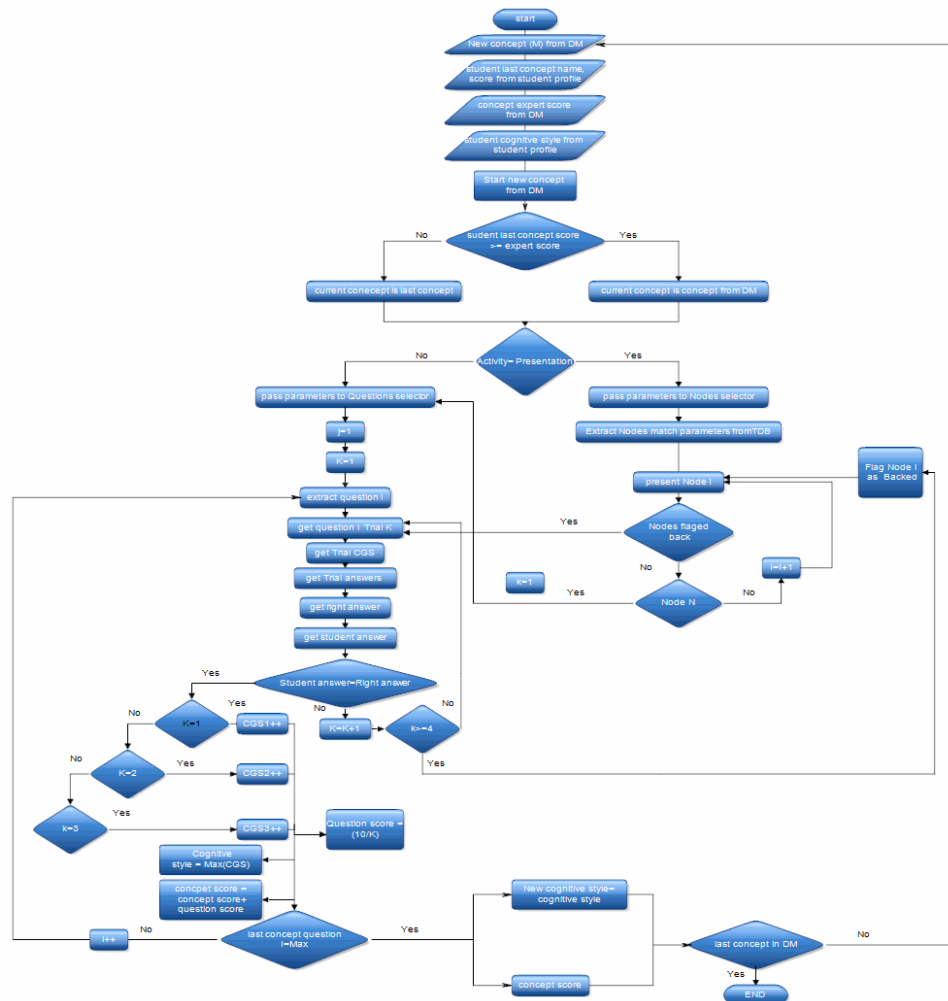**Figure 5: Presentation agent modeling**

Fig 6: AM activities

EA, in its turn receives as input the student current cognitive style, and current concept to be tested which is already determined in AM. EA also will generate the query to retrieve the appropriate questions to evaluate the student for current concept . Pass the query to the Questions selector to retrieve the required questions from Questions Database (QDB) which match with these parameters. EA will give an order to the RM to present the questions in sequence to the student. EA has similar model of PA modeled in Figure 5.

The question which will be presented to the student has the form as in the set <concept, Question, Trial, Question Text, cognitive style > as seen in Figure 7.
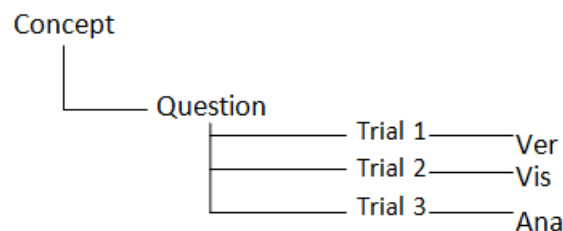

Figure 7: concept tree

For each question Trial there are three answers represented in the tuple <concept, Question, Trial, Answer i> as seen in Trial tree in Figure 8.
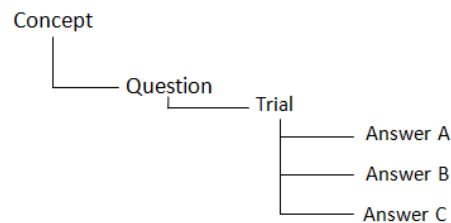

Figure 8: Trial Tree

These questions will be presented to the student after finishing the concept presentation nodes. Exam agent also will match between the student answer with the right answer and determine the score according to the trial. If the student answer the question correctly then he will get the score of (10/trial no). If the student fails to answer in three trials EA will send him back to the presentation agent which will enforce the student to review the Nodes related to this concept again. Then back to the test questions again. Another function of Exam agent is to determine the new cognitive style of the student. This determination will be extracted from the field of cognitive style assigned to each question trial. Exam agent will count the number of trials which has one cognitive style most answered correctly and state the new student cognitive style.

RM consists of forms which should be built dynamically according to the order of the PA and EA. These forms will be as the result of the queries matched with the parameters passed by PA and EA to QS and NS. AM activities are described in flow chart shown in Figure 6.

Nodes Selector:

Nodes selector is an a query executer which receive the query from PA and execute it. The query will be in the form of:

Select Nodes from Materials_DB where

Concept = current_ concept in AM AND

Cognitive_style=current_CGS in AM

RM will receive these nodes and present then in sequence.

Question Selector:

Question selector is also receive a query from EA and execute it

The exam query in the style like:

Select EX Trial_text, Trial_right_answer, Trial_choices from Exam_Question_DB where

Concept = current_ concept in AM AND

Cognitive_style=current_CGS in AM AND

Trial_no= Current _trial_no

RM will present the questions and the answers to the student in sequence.

Concept Score Evaluator:

As seen in the system flow chart, Concept evaluator is incremental procedure read the student answer and compare it with the right answer. Concept evaluator should take in consideration the trial of the question to calculate the concept score. The concept evaluator is described as the set <concept, , question, Trial, right answer, student answer, result, score (10 /Trial #)> as seen in Figure 9. Concept evaluator will evaluate all exercises related to the current concept. Concept

evaluator will represent one part of the dynamic modeling of the student since the concept score will be stored in the student profile once it is processed.
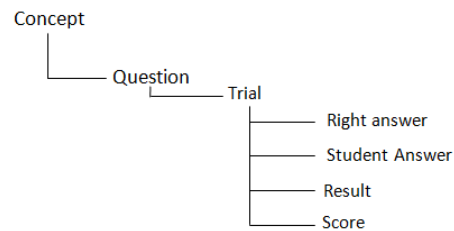

Figure 9: Trial Tree

Cognitive style evaluator:

As seen in the system algorithm, Cognitive style evaluator is another accumulative dynamic student modeling. It evaluates the new student cognitive style according to his questions answers. The cognitive style evaluator will have the following procedure.

For each exercise trial in the exam related to once concept there is one answer. This answer has assigned cognitive style. When the student answers, the cognitive style of this question is stored. At completing of all exercises each cognitive style will has a rate percent. For example if the exam has 15 questions. The student answered 8 of them with 'ver' cognitive style, 5 with 'vis' cognitive style, and 2 with 'ana' cognitive style. It means the student has the set <53%, 33%, 14%> for the set <ver, vis, ana>. At this stage we can consider the student as verbal student in this concept. In the next chapter presentation agent will generate a query which look for verbal LOs. However in the next concept the student will repeat the same process and will get a new set of cognitive style let's say <34%, 55%, 11 % >. In this case next concept will be presented in visual pattern. At the end of the unit the student cognitive style for this unit is calculated incrementally from all previous cognitive styles measured in last unit concepts. This process will be repeated incrementally until finishing the chapter. Fuzzy logic which will be describes in next research paper will be used to estimate the student cognitive style for the next chapter. For more details about this algorithm we can describe it in the following flow chart in Figure 10.

Chat room Interface adapter:

Chat room interface adapter is discussed in our last paper [Jabari]. It is an additional separated system can get advantage from student modeling in our system. Adaptive chat room is a collaboration tool among students when they want to discuss among each other's. This tool gives an evidence about the student knowledge level for each student participate in chat room relying on student-concept evaluation. In order to give this evidence the chatroom takes an input from both student and domain model, and adapt the chat room according to the input. The student who has knowledge less than the current student will appear in red color. The student who has knowledge equals to the current student knowledge will be given a yellow color, and finally the student who has higher knowledge will have green color. This way makes it easier for the current student to determine with which student he should discuss the current concept.

Peer evaluation:

Actually the student will be evaluated for each concept separately through the exam after each concept learning process. For example student X got a score of 60% in concept C1 evaluation. During discussion with peers he may have new knowledge about the concept. This increment in knowledge level should be measured. Once two peers finishing their discussions about one concept, a questionnaire should be popped up for both peers to evaluate each other, after filling the questionnaire it will be analyzed and passed to the student model to extract the increment in the students' knowledge and store it in the student profile.
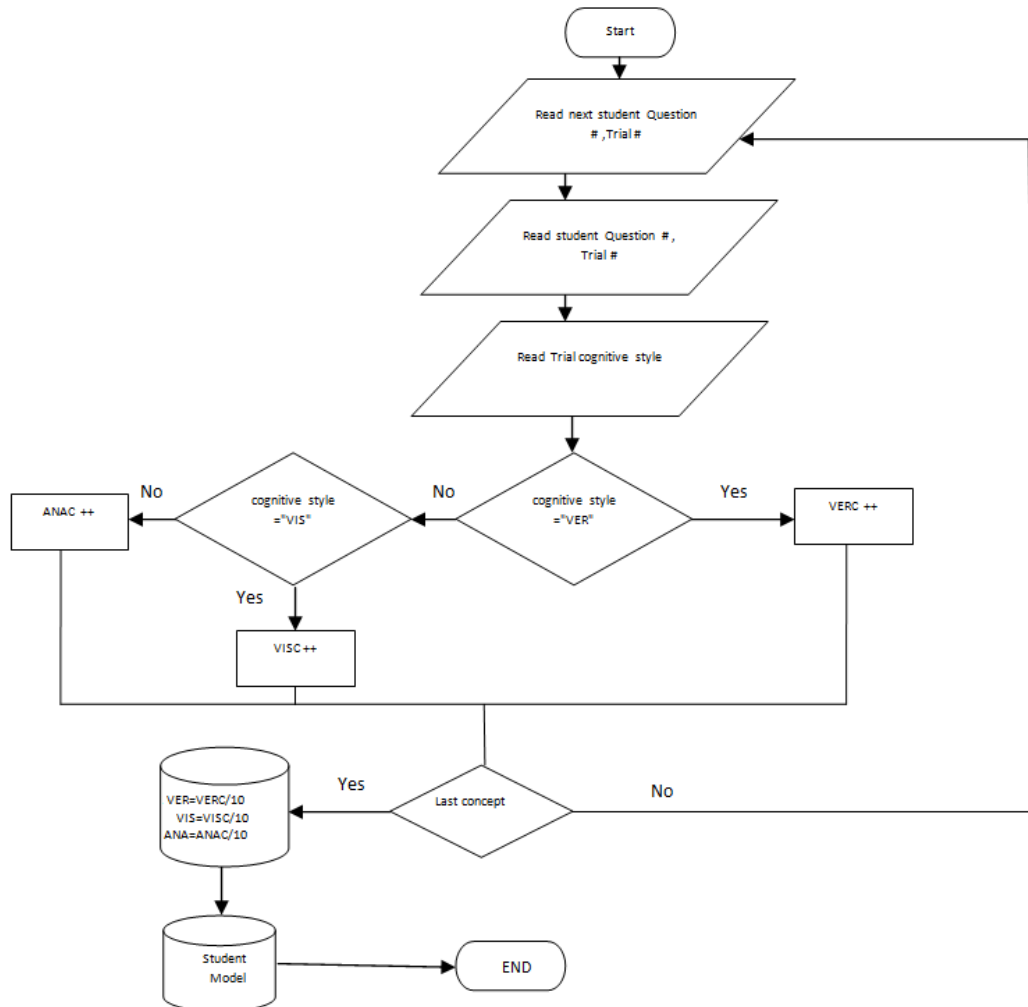
Figure 10: Cognitive style evaluator for one concept

Algorithm evaluation

To evaluate the algorithm let's consider the following example from the course introduction to computer science

First: DM (partially)
Chapter 1: introduction to computer
        Module 1: introduction
        Module 2: computer ethics
        Module 3: computer development
            Unit 1:manual counting
                Subunit 1: devices
                    Concept 1: abacus
                    Concept 2: Napier
                    Concept 3: outghtred
                Subunit 2: comparison
            Unit 2:half mechanic counting
            Unit 3:electronic computers
Chapter 2: computer system components
Chapter 3:software
Chapter 4: internet

For concepts from 1 to 3 in subunit 1, unit 1, module 3, chapter 1 let's consider the student initially has cognitive style VER. This estimation can be extracted from a questionnaire. Nodes (web pages) related to each concept is already stored in the teaching materials database in different forms for different cognitive style and related directly to DM architecture, let's take concept 1: Abacus as an example, two nodes as a sample related to this concept will be as the following Figure 11.
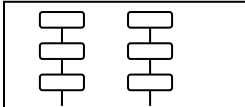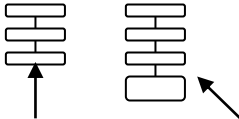
	N11	N12	N13
N 1	Definition Abacus was invented in china, it's just a simple machine consists of a columns in vertical positions full of small rings	Definition Abacus was invented in china, its look like as in the picture	Definition Abacus was invented in china, See the video of this device and it works on the following web site www.countingmachin.com

	N21	N22	N23
N 2	How does it work Using rings to represent place values	How does it work	How does it work Flash representation for how this machine perform the calculation

Figure 11: Multi paths of learning objects

For each Node there are three patterns. N1 (N11, N12, N13) and (N21, N22, N23) for <VER, VIS, ANA > respectively. Since the student initially has cognitive style as 'VER' Then the PA will generate the query to select Verbal Nodes. Nodes selector will retrieve N11 and N21 for this concept. RM will present these two concepts in sequence to the student. As a sample we consider here only these two nodes. Once the student finished the nodes he should directly start the exam related to this concept . Test related to each concept is already stored in the Test database. EA will receive current concept from AM. In our example its abacus, and the student cognitive style is 'VER' and generate the query. Questions selector will execute the query and get the questions and trials. In Figure 9 we have the result of the query retrieved by Questions selector.

EA will pass the questions trials to the RM in sequence. Question 1 first trial. according to his answer he either go to next question or receive next trial. Suppose the student answered question 1 trial 2 correctly then he will get the score of (10/2 = 0. 5). Next question will be presented to the student. Second question the student answers Trial 2. The score is also 0. 5. In the last question the student answers Trial 3. The score is (10/3 = 3. 33). Final score of this concept is (0. 5 +0. 5 + 0. 33 = 1. 33). The student answered two question with 'VIS' (degree of Visual is 2/3 =0. 67) and one question with 'VER' (degree of Verbal is 1/3= 0. 33). The student dynamic modeling gives two sets for this concept. concept score < 1. 33>, concept cognitive style < 0. 33, 0. 66, 0> for <VER, VIS, ANA >. The new student cognitive style will be VIS and stored in student profile.

AM will receive this cognitive style from the student profile and pass it to PA to use it for the next concept.

	T1	T2	T3
Q1(N1)	What is abacus	Select what are you seeing in the shown picture	Select how you can create abacus machine
CGS	**VER**	**VIS**	**ANA**
Choices	A. some answer B. some answer C. some answer	A. some answer B. some answer C. some answer	A. some answer B. some answer C. some answer
Right Answer	**A**	**B**	**B**
Q2(N2)	Look at the rings in the picture and select the number represented	In the following video select the number counted by John	How does abacus work
CGS	**ANA**	**VIS**	**VER**
Choices	A. some answer B. some answer C. some answer	A. some answer B. some answer C. some answer	A. some answer B. some answer C. some answer
Right Answer	**B**	**A**	**C**
Q3(N3)	Some Q	Some Q	Some Q
CGS	VIS	ANA	VER
	A. some answer B. some answer C. some answer	A. some answer B. some answer C. some answer	A. some answer B. some answer C. some answer
Right Answer	**C**	**C**	**A**

Figure 12: Multi paths of learning objects and multi trials of exam questions

Conclusion

A prototype for student adaptive online presentation and evaluation based on learning objects sequencing and Petri Net model is a strong tool for adaptive e-learning approach, the algorithm which is introduced contains the evaluation tool for student knowledge and estimation the student cognitive style, the model presents the learning objects according to this style, cognitive style will be initially determined by the questionnaire proposed by [7], then this cognitive style will be updated dynamically by the exam questions sections, these sections will be extracted from the questions types, each section will give indication about one type of cognitive style, exam should be applied according to the concept learning objects, each question can be presented in different forms to give the student many chances for better understanding the question and try to answer it several times, each time he fails he will loose score, if he fails to answer the evaluation from one level to level until having the evaluation for all the course.

Future work

In the future work, the implementation model for the learning objects in RM will be described in detail, the mechanism of AM and how it should selects the learning objects according to cognitive style.

ACKNOWLEDGEMENT:

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Editor's Note: The participation element in online courses should be clearly defined for effective interaction and a positive online experience.

Using Service Scripts in Online Courses to Increase Role Clarity and Satisfaction

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USA

Keywords: script, role, online, clarity, congruence, satisfaction, service

Introduction

In services, the quality of the service experience is dependent upon both the service provider and the customer. The same can be said for education. The delivery of a satisfying educational experience is highly dependent upon the behaviors and inputs provided by both the instructor (i.e. service provider) and the students participating in the course (i.e. recipients of the service). A challenge for online instructors is to acknowledge differences in student roles between online and traditional courses. Similar to self-service settings, students enrolled in online courses will need to take a more active role. Students must be self-directed and responsible. Students must have the ability to retrieve online course materials, complete online assignments, submit assignments electronically, and participate in online chat rooms, blogs, etc. While greater convenience may be a primary motivation for enrolling in an online course, students may find this environment to be challenging given the differences in the structure of online courses relative to traditional courses. As such, clarifying student (and instructor) roles becomes important and can be accomplished through the use of service scripts. Clarifying the role for an online student should result in more appropriate behaviors, clearer expectations and a more rewarding online educational experience for students and instructors.

Role Theory

In some services, such as banking, healthcare, and education, the "customer can be involved in co-creating the service (e.g. using an ATM, providing health history, contributing to class discussions). For such services, customers have essential production roles that "…affect the nature of the service outcome" (Bitner, et al., 1997). Role in this context refers to those behaviors that are appropriate for the situation and which will increase the likelihood that the individual's goals will be attained (Solomon, et al., 1985). For example, when making a deposit or withdrawal from an ATM, the customer's role includes following each of the steps necessary to successfully complete the transaction. In taking part in the service production, the customer may attain additional goals such as avoiding lines inside the bank or accessing accounts in more convenient locations and at more convenient times. For students enrolling in online classes, goals of increased convenience and flexibility of time and location may be experienced. Larsson and Bowen (1989) suggested that customers, as "partial" employees must learn the script or series of actions that are appropriate to their role. In other words, the customer must provide relevant input into the service process in order for the experience to be satisfactory. Additionally, the quality of that input may affect the productivity of the firm (Mills et al., 1983) because the customer is contributing to the creation of the service. For example, the productivity of a bank teller at a drive-through is negatively affected when the customer waits to fill out a deposit slip until reaching the window rather than having previously completed the form. When certain desired behaviors are not followed by one customer, the process is slowed down for the employee, thereby increasing the wait time for other bank customers. If the motivation (goal) for a drive-

through customer is to save time, the goal is not met and they will be less satisfied with the service experience.

For the online classroom, the degree that the student is adept at using the online learning system (e.g. Blackboard) and the effort he or she applies to the requirements of the class may affect class progress as well as the experiences of the participants. The quality of customer inputs may also result in greater personal satisfaction for the customer (Bitner, et al. 1997). The degree that students are able to provide quality input depends on a clear understanding of the role they are to perform for the online course. By following the prescribed role, student may derive greater satisfaction because they contributed positively to the class experience. And other students' experiences may be enhanced by the contribution.

Roles include both behavioral elements and specific contributions to the experience (Groonroos 1983). In traditional classrooms, the student's roles could include completion of assignments, answering questions and other class participation such as in-class group learning activities. For online classes, the ability to use the online learning system with minimum error and angst is necessary to fulfill the student's role. The online course should also include attempts to create social interaction in a mediated context (Roberts, et al., 2005) as these create situational factors that may affect the learning process (Howland and Moore, 2002). Given the lack of face-to-face experiences, role expectations regarding online student to instructor and student to student interactions must be considered. Use of chat rooms, dependence on e-communication, blogs, etc. may create differences in interpretation due to the lack of nonverbal behaviors (e.g. body language and eye contact) which cannot be observed in the same way as in a traditional classroom. The intent and/or affective meaning can often be lost or misunderstood when reading text communication. Clarifying student roles and appropriate interactions may result in higher levels of satisfaction and success.

Student Roles for Online Classes

In education, individuals learn what it means to be a student (i.e. the role) from peers, family, previous educational experiences and instructors. The student may have perceptions about what they can add to the experience and about how they are to behave based on traditional classroom roles. However, when the educational experience is delivered in a new way (i.e. through the Internet) ambiguity may exist about the role the student should play.

Role congruence is the degree that an individual's expectation of their role matches the role he or she actually performs during a service encounter (Kelley, et al.1990) and is improved through the reduction of ambiguity. For example, a student may expect that workload (number and type of assignments and participation) in an online class is similar to that of a traditional class. However, because participation is primarily assessed by the instructor of an online class through written work (e.g. comments electronically submitted as part of an online discussion), the student may find that greater effort is required to participate compared to voicing a comment in a traditional classroom. Instructors should consider that students could be unaware that adaptations to their behavior may be necessary for an online class. In order for the students and faculty to be satisfied with the online educational experience, it is important that each student understands his or her role and is competent to perform that role.

In a study of predictors of usage of self service technology, Meuter et al. (2005) found that a key predictor of whether or not a customer chooses self service (e.g. self-check-in at airports) was determined by consumer readiness. Consumer readiness consists of role clarity (do consumers know what to do), ability (do consumers have the ability to use the technology) and motivation (do consumers see a benefit to using the technology). The dimensions of consumer readiness may be useful for understanding role modifications that may be needed for successful completion of

an online course. Students are often motivated to take online courses based on their perceptions that it will benefit them in terms of time and location. However they may have neither role clarity, nor role ability. Because students will come to class with differences in abilities, motivation, and experience with the technology and/or class format, communication about the differences is critical in the initial interactions with the student. Clarification of the roles students perform in online courses through training and communication may improve role congruence and result in students who have increased readiness to be successful and higher levels of satisfaction. The elements of student readiness may be improved through the development and use of scripts as originally conceived and used in other service industries.

Script Theory

A service script is a "chronologically ordered representation of the steps that make up the service performance from the customer's point of view." (Fisk, Grove and John, 2008). The theory adopts the analogy of actors in a dramatic performance to customers in a service setting. The theory suggests that customers may have a more successful and satisfying experience if they have an understanding of their role in the creation and delivery of the service. This understanding comes from a "script' delineating each step in the process. Advantages of this approach include the communication of a consistent message to all involved in the process and an assignment of responsibilities of each participant (Holdford 2006). By scripting the responsibilities of students and instructors, "readiness" will be improved potentially increasing satisfaction for everyone.

An example of a simple service script is shown in Exhibit 1.

Exhibit 1

Simple Script for a Museum Visit

Backstage

Service Provider:

    1. Arrive at museum prior to opening.

    2. Ensure adequate currency for making change.

    3. Check museum facility for cleanliness, check exhibits, etc.

    4. Open museum doors.

    5. Receive artifacts.

    6. Catalog artifacts.

    7. Prepare artifacts for use in displays

    8. Prepare displays (could also be frontstage)

Frontstage

Customer:

    1. Arrive at museum; locate parking area; park vehicle.

    2. Locate and follow path to museum entrance; enter museum.

Service Provider:

    3. Greet customer; Establish status of customer (e.g. first time visitor; museum member, etc.) and purpose of visit (e.g. general tour; special exhibit; gift shop).

    4. Tell customer admission price.

Customer:

    5. Offer payment

Service Provider:

    6. Accept payment [Note: This payment process could also be scripted].

    7. Direct customer to appropriate starting point.

Customer:

    8. Proceed to exhibit; read directive signing and exhibit description; move to next exhibit.

When visiting a museum both the customer and the service provider play roles that result in the satisfactory creation and delivery of the service experience. The script may include both front stage and back stage responsibilities. That is, some of the tasks are visible to the customer and other tasks are performed out of the line of view of the customer. For example, the customer sees the exhibits displayed in different areas of the museum, reads signage describing the exhibit and process information before moving to the next display. However, the customer does not actually see the receiving, archiving or data entry processes of the exhibit components (e.g. artwork, artifacts).The same is true of the tasks involved in the educational process. The student sees his or her graded assignment when it is returned, but does not see the assignment as it is being graded. Both students and instructors are present and observe each other during a traditional class lecture. However, neither participant sees the other as they prepare for the class. In the online format of education even more of the tasks are performed "backstage" . This can present a unique problem as the interaction becomes less personal than in the traditional classroom. Instructors may seem "less human" or viewed as "not a real person" because the face-to-face interaction of the traditional classroom is missing (Haskell, 2009).

Service scripts should address specific behaviors and activities (i.e. roles) of both the service provider and the customer. These may further be divided into categories to address specific issues. Identification of these categories correspond to the varying situations where scripting may be beneficial to clarify student and instructor roles. For example, in a study of service scripts in pharmaceutical education, situations were identified where pharmacy students could benefit from understanding exactly how to behave and interact with customers. The categories identified were: practice problems (e.g. interacting with an angry customer); clinical problems (e.g. patients with drug allergies); and managerial problems (e.g. firing unproductive employees) (Holdford 2006). The relationship of scripts to increased role congruence and student satisfaction is shown in Figure 1.
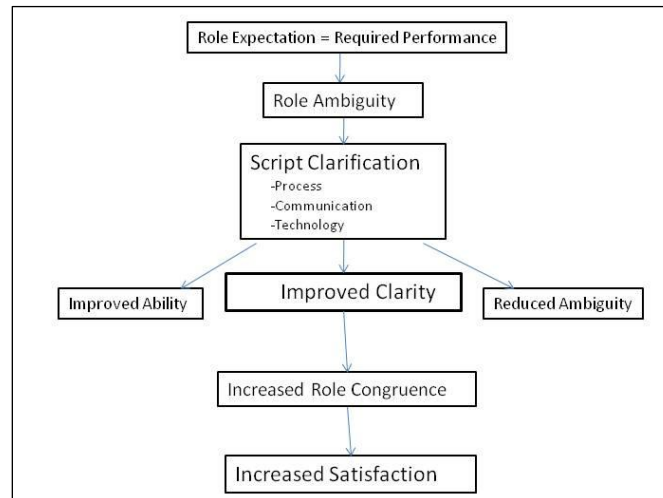
Figure 1 Script clarification and student satisfaction

Exhibit 2 shows categories of issues where scripting could be beneficial for online education. These categories include situations involving communication between student and instructor regarding specific requirements; communication among students, situations involving processes during the course; and situations involving problems with the technological aspects of the course. Scripts for some of the problems could be fairly simple, while others could be more complex. For example, a script identifying the process for submitting an assignment would likely involve fewer steps than a script to resolve a technological problem that resulted in a student not being able to submit an assignment. Service scripts should be detailed enough to improve role clarity.

Exhibit 2

Service Script Categories

Process

Examples:

Describe how to submit assignments.

Describe how to take quizzes and exams.

Provide time frame (start/end times) for all activities.

Describe how the student can access feedback and grades on completed work.

Communication

Examples:

Students are confused about how to complete specific assignments.

Students write to the instructor in texting abbreviations.

Students are unclear about what constitutes adequate and appropriate discussion.

Students post inappropriate/personal comments.

Technology

Examples:

What should the student do when:

the student is unable to access system.

the student is unable to retrieve course materials.

the application is not available.

the student's software is not compatible with university system.

Provide contact information for students to get assistance when technical problems arise.

Determine procedures and penalties for late submissions due to technical problems.

Determine requirements for verification of problem and how work will be submitted after the deadline.

Exhibit 3 is an example of a script for online discussions. As can be seen, all participants have roles for which they are responsible.

In addition to increasing role clarity for students, service scripts may also be helpful to first time online instructors who may be very adept at teaching, but be unfamiliar with online learning systems and changes in course structure, delivery of information and communication with students in the online environment. The exercise of walking through the processes in such detail can be enlightening for the instructor and help both the novice and experienced online instructor to clarify specific roles. The students' responsibilities can then be communicated to reduce role ambiguity.

Exhibit 3

Service Script for Online Discussions

Instructor

Backstage

1. Prepare discussion topic and decide on assignment

Frontstage

2. Assign discussion topic and provide timeframe.

Student

Backstage

1. Log on to system; click on discussion topic tab to identify topic.
2. Read assigned materials relating to the topic.
3. Enter chat room

Frontstage

4. Post well thought out comment to assigned topic in complete sentences; wait for response from other students.

Instructor

Backstage

3. Enter chat room to observe discussion.

Frontstage

4. Post response and clarification to student comments; pose additional questions as appropriate.

Student

Backstage

5. Read each student's individual comment.
6. Consider all student comments collectively.

Frontstage

7. Respond to other students' comments thoughtfully and respectfully in complete sentences.

Summary and Conclusions

Students often evaluate the online delivery process based solely on the performance and actions of the instructor. When the student has a better understanding their own role, their expectations and perceptions of the online course may be more favorable. The scripting process may better clarify the student's role relative to the instructor's role and create a more positive and satisfying educational experience for all participants.

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Communicative Language Teaching: Is it appropriate for Indonesian Context?

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Abstract

With the development of English as a Foreign Language (EFL) teaching in Indonesia, we have become more aware that the use of the communicative language teaching (CLT) does not always suit all English teaching situations. Teachers have also discovered that there is no single teaching method that deals with everything that concerns the form, the use, and the content of English. The approach is in many ways a commitment to eclecticism in practice. English teaching should be partly communicatively oriented, so students can acquaint themselves with appropriate language usage. This article tries to search for the appropriate teaching model for the Indonesian context. Although the CLT has been applied in some public schools in Indonesia, some barriers are often found in its implementation. Eclecticism is an alternative that could be tried.

Introduction

The general debate regarding how education is conceptualized, and the question of whether learning is a process of mastering abilities and knowledge "acquired" from the previous generation, is reflected in contemporary thinking in second language learning. The communicative approach or what is known as CLT (Communicative Language Teaching), learner-centered instruction, and task-based teaching are three concepts in second language learning that have been influential over the past two decades. The three concepts are part of the interpretative view of education. This viewpoint conflicts with another that assumes that learning is a process of acquiring abilities and knowledge transmitted from teacher to student. The interpretative tradition regarding learning, which is strongly rooted in the humanistic psychology tradition, argues that in order to allow learning to occur, students must reconstruct abilities and knowledge for themselves, the two of which are not easily obtained from external sources.

A second, quite significant paradigm shift in language teaching occurred in the 1970s when language and language-teaching experts adopted a new viewpoint regarding language itself. In the previous era (the 1960s) language was seen as a set of systems of rules and the main goal of language learners were to approximate the native speakers of the language they were taught. The priority for a language learner was to master the language structure, and in the learning process, emphasis on the language meaning itself was seen as a lesser goal. In that era language teaching emphasized syntax and grammar, ignoring or at least minimizing vocabulary development and semantics. However, in the 1970s, the conceptualization of language teaching became richer with the appearance of new ideas which are based on humanistic and experiential psychology. Linguists saw language more as a system of meaning expression rather than an abstract system of syntax rules.

The Indonesian Context

There are three important issues related to the context of English teaching in Indonesian public schools: the role of English in the people, the national curriculum of English language classes, and the practice of English language teaching in public schools.

The context of English language teaching in Indonesia is inescapable from its role, considered more as a foreign language rather than a second language. In a setting where English is a foreign language, students usually learn with low intrinsic motivation; English may be deemed irrelevant with students' needs because the language is not part of their everyday life. In this setting students usually learn in one large class consisting of 40-50 students with a limited number of meetings. On the other hand, in a setting where English is a second language, students have high intrinsic motivation because the language is a part of everyday life. By living in a second language environment, students have a higher chance to use the language whether to communicate with others or for professional needs, as in searching for a job. Even though the use of English in Indonesia – whether written or spoken – is increasing as evidenced by print and electronic media, the language still has not shifted its position from being a foreign language to becoming a second language.

Meanwhile, the curriculum for English classes in Indonesia has undergone many changes over the years. It started with grammar-translation (1945), followed by oral (1968), audio-lingual (1975), communicative (1984), and finally meaning-based (1994). In 2004, the government published a new curriculum – the 2004 Curriculum – which is more well-known as the Competence-Based Curriculum (Kurikulum Berbasis Kompetensi – KBK). Within two years of the implementation of the curriculum, in 2006 the government published another curriculum, the Unified Education Curriculum (Kurikulum Tingkat Satuan Pendidikan – KTSP), by Ministry of Education Regulations number 22, 23, and 24 of 2006, each regarding content standards for elementary and middle education units (Regulation 22, 2006), passing competence standards for elementary and middle education units (Regulation 23, 2006), and the execution of said regulations (Regulation 24, 2006). As an example, for a middle school-level English class, in contrast to the 2004 curriculum which sets standards for competence, indicators, and core materials, the 2006 curriculum only sets competence standards with the intent to give teachers the freedom to develop themselves with their own creativity instead of being tied down to the curriculum.

No empirical research as of yet has been conducted that evaluates the effectiveness of the changing curriculums on student learning results or even the increase in teachers' competence or performance. In the meantime, despite the lack of empirical research that compares the effectiveness of learning English in courses and formal schooling, it has become a public understanding that learning English in courses is believed to be more effective and beneficial to students than learning through formal schooling. English language courses have expanded quite significantly, from those that are managed by official foreign country representatives such as The British Council, Indonesian Australia Language Foundation-IALF, English First-EF, and others, to private ones managed by individuals. While schools still struggle with teaching grammar and committing language rules to memory, courses instead stress speaking skills, with more meetings compared to classes in schools. Some courses even go as far as to advertise claims of "fluent speaking in three months" to draw consumers. Not only that, some courses utilize native-speaking teachers to accelerate speaking skills. Usually, programs with such teachers are offered at a steeper price compared to ones with local teachers, even though native speakers may not be any more competent. More often, the people appreciate inexperienced or even unskilled English native speaker teachers than local instructors who are fluent in English, experienced, and skilled in this field.

The praxis of English language teaching in Indonesia varies from schools that teach English well to those that lack such a quality. Generally, these schools can be divided into three groups.

1. First are the public and private schools in major cities which are able to teach English effectively. Schools in this group have advanced English laboratories, teaching materials on par with the international standard, quality teachers, communicative teaching methods, students learning in ideal but not-too-large groups, and even the use of English as a

teaching language in other classes. Students in these schools tend to have good communicative competence, so the national exams do not become a problem for them and the school. Most of the students in this group of schools also take English courses outside of their schools. Quite often, these schools require a certain TOEFL score as part of their standards for passing.

2. Second are the public and private schools that do have adequate language laboratories, sufficient teaching materials, and quality English teachers, but are hindered by the government policy regarding the national exams so that the only purpose for English classes is to help students answer the questions on the exam, especially for students of the last grade. The communication aspect of the students' learning of English in this group is often ignored. Moreover, schools in this group have very high numbers of students in a single classroom, between 40-50. Only a small portion of students also take English courses.

3. Third are the schools that do not have a language laboratory, have many students in a single classroom, do not have sufficient teaching materials, have low-quality English teachers, and use ineffective teaching methods. Students learning in this group of schools usually have low learning motivation and low starting competence, which they may carry even up to graduation. Schools that fall into this group are private schools in the outskirts of towns or public and private schools in villages, rural areas, and remote locations.

The majority of schools in Indonesia fall into the second and third groups. Teaching English in these schools are not effective for a variety of reasons including lack of facilities, unavailability of materials, low-quality teachers, many students in a single class, non-communicative teaching methods, and stiff and exam question-answering-oriented curriculums, among others.

The factor of Indonesian culture as part of Asian culture is often considered as a barrier in creating a communicative form of English learning. In this context, "culture" means the relationship between teacher and student, viewpoints on learning, and communication patterns. The formal relationship between teacher and student where the teacher is assumed to be a superior, omniscient figure while the students are a group of individuals who must obey and receive the teacher's explanations as they are clearly will not create a communicative learning environment. The high-considerateness nature of Asian communicative patterns where students are not encouraged to interrupt, must respond positively, and speak in a flat intonation, also make it less likely for communicative interactions to occur in language learning. Coleman (1996) sees that the learning process in an Indonesian class is highly related to two Javanese local cultural products: shadow puppets and the greeting at a wedding reception or other celebrations. According to Coleman, the classroom English learning process is not unlike that of the shadow puppet show. The teacher is analogous to the actively-talking puppeteer (dalang) and the students are analogous to the large audience that freely relaxes, eats, drinks, and even sleeps, only to awaken and pay attention during the funny and active parts. Such is also the case with the wedding reception greeting: not much of the audience pays attention. For Coleman, English language classes in Indonesia are just rituals. What is interesting is that when Coleman interviewed several English language curriculum experts in Indonesia, including Sadtono, the experts do not consider such classroom behavior as to be a problem.

The Communicative Approach: Between Concept and Reality

This method is also called Communicative Language Teaching (CLT). The goal of teaching with this method is to use the language as a medium of communication. Learning stresses interaction, conversation, and language use rather than "about" language. Topics discussed in class usually consist of general ones familiar to students, such as TV programs, daily activities, or newspaper ads; topics could also relate to other classes a student has, such as mathematics, history, or

literature. However, the topics are only used as discussion materials to practice using language as a medium of communication, not to study them.

CLT was recognized in the early 1960s and into the 70s. This learning model surfaced as a reaction to what could be called a failure of previous teaching models, namely the structural situational and audiolingual methods. This period was a period where second language teaching practitioners spoke about the "going communicative" jargon, where language teaching must be stressed on the communicative competence aspect. Additionally, CLT appeared as a response to developments in linguistics in the 70s, and at the same time a response to the need for a new method in second language teaching, expressed by a group of European linguists who were a part of the Council of Europe (Richards, 2001:37).

CLT stresses that language teaching is more than just knowing about grammar, vocabulary, and phonetics. Language learning needs to develop the communicative competence, which is the ability to use the language being learned in social interactions. Communicative competence does not mean setting aside the role of grammar, but instead it is a combining of several competencies, among them grammatical competence (covering language structure), sociolinguistic competence (covering the ability to understand the social context where the language is used, including the goal of communication), discourse competence (covering the ability to understand the message presented in the language), and strategic competence (covering the ability to create good communicative tactics to begin, respond, and end conversations).

In the teaching praxis, CLT requires several conditions: content focused on language knowledge relevant to students' needs, a cyclical (not step-by-step) content order, division of content into several activities and tasks requiring communicative interaction, a relationship between said activities and tasks, and learning goals chosen by negotiation between students and the teacher. CLT can occur if communicative activities happen while working in pairs and groups, language input is authentic language used in everyday life, students are compelled to dare to produce genuine language and meaningful communication, and classroom tasks are oriented to prepare the student to be able to use the language outside of the classroom.

Conceptually, CLT seems to be the ideal learning model, especially if the target of foreign language teaching is to use the language. However, CLT is more suited for teaching English as a second language rather than as a foreign language. The application of the communicative approach (and thus CLT) in teaching English as a foreign language is often criticized by language teaching experts, mainly because CLT was first developed in western, English-speaking countries, which when applied in a developing country, the method becomes inappropriate for the local context. The problem encountered in the application of CLT in developing countries, specifically Asian ones, is that the method conflicts with the social, cultural, and economic conditions of the subject country. The difference in eastern and western communication style and the difference in classroom conditions, teaching facilities, and teacher quality are some examples of the particular problems faced.

Some cases of the application of CLT can be found in Asian countries. The following are such cases, including the problems:

- Deckert (2004) found that the failure of the application of CLT in the United Arab Emirates was caused by excessive teacher talk and teacher and student perceptions about effective English teaching. Observations showed that excessive teacher talk in explaining to and correcting students causes them to miss opportunities to actively participate using English in communication.

- A research by Gahin &Mayhill (2001) showed two roadblocks in the application of CLT in Egypt. First are extrinsic barriers covering economic factors which include low wages, lack of resources, and large classes without adequate facilities; pressure from parents,

students, principals, and supervisors cause teachers to sacrifice an ideal CLT syllabus. Second are intrinsic barriers covering cultural factors which include passive-student traditions, negative-to-group-work attitudes, and influences of colleagues in other, teacher-dominated subjects. Furthermore, the ability of teachers, in particular 41% of English teachers of which are non-specialists lacking in pedagogical performance and speaking, as well as inconsistencies between syllabus and exams also contribute to the intrinsic barriers.

- Zhang (2004) in *CLT in China: Frustrations, Misconceptions, and Clarifications*, mentions a few cultural barriers in applying CLT across mainland China, such as the unsupportive environment where English usage lacks, the inability of teachers to communicate using English, and the examination system which still focuses on grammar. Even though China has now economically shifted to liberal capitalism, the remnants of communism can still be found in education, like in permanent and unchangeable class seating, which does not allow group work to happen – a requirement for CLT to occur.

- Liao (2004) adds that the Chinese local cultural context, as agreed upon by other researchers, is Confucianism, which assumes the teacher as the central figure that must be honored and that students must passively listen to the teacher. This general Asian culture prevents genuine communication from happening in class, making it a hindrance in the application of CLT.

- Miller (2000) in "Student Teachers' Perceptions about Communicative Language Teaching Methods", *RELC Journal,* Vol. 31, No. 1, concludes that the perceptions of students of English teaching academies in Taiwan regarding CLT are influenced by several factors such as their experience as student teachers, their Chinese culture, and their learning experience as language learners. Their perceptions vary, from those that view CLT positively, to those that see it negatively. Those with positive perceptions are optimistic that CLT will increase the English communicative competence of Hong Kong students because students will learn English more actively, CLT is appropriate to the goal of language learning which is as a medium of communication, CLT makes the learning atmosphere more fun, and teachers will increase students' interest in learning English, among other reasons. On the other hand, those with negative perceptions are pessimistic that CLT is hard to apply in the Hong Kong context because classrooms are small while the number of students are large, grammar is hard to teach with CLT, CLT slows down the learning process, CLT needs preparation and teachers do not have the time, examinations do not support CLT, and students have low communication skills, among other reasons.

Eclecticism: From Method to Principle

The failure of the application of CLT in some Asian countries because of such context incompatibilities has brought up the idea that CLT has to be modified to suit the Asian, and especially Indonesian, context. As a method, some of the principles of CLT need to be modified so that it can be applied in our socio-cultural context, like small classrooms with students of various skill levels, the position of English as a foreign language, the custom of students learning in a traditional class, the custom of teachers using traditional teaching methods, the lack of quality teaching materials, and the low quality of teachers in English or English teaching skills.

What is needed to be applied in Indonesia right now is an eclectic teaching method. Gone is the era where learning is tied to only one stiff teaching method. Methods were criticized because of their claim of universality with no consideration of the uniqueness of certain groups so that they lose their context. The CLT method that is needed is one that adopts good foreign language teaching principles that result from research and observation.

Methods have been criticized for claiming universality of application as well as uniqueness in their individual properties and particular insights. … [M]ethodology should comprise putting into practice certain general principles of good language teaching derived from research and observation. (Rodgers, 2004: 2-12)

Foreign language teaching methods in classes should not be tied to just one method, but instead teachers can apply different methods at one time to adjust with their students. When a teacher wants to apply a foreign language teaching method, what matters is that they apply the principles of that method, not the method itself. Even the Grammar Translation Method sometimes needs to be applied in certain class contexts.

The following are foreign language teaching principles that teachers, writers of teaching media and materials, and even developers of foreign language curriculums can expand upon (Vale *et.al*. 1991).

- Students will learn a foreign language best if they are treated as individuals with their own needs and interests, they are given a chance to participate in communication by using the language in various activities, the communicative activities given to them are comprehensible and relevant to their needs and interests, they focus on various language forms and skills, as well as various learning strategies to support language acquisition, they are aware of the role, function, and nature of that language, they are given appropriate feedback regarding their achievement.
- Students will learn a foreign language well if they are given a chance to arrange their own conversations.
- Students will learn a foreign language well if they practice using the language in the cultural context of that foreign language.

By applying the above principles, teachers are challenged to apply CLT which is appropriate to our context. For example, to treat students as individuals in a large classroom consisting of 40-50 students is not an easy task. However, teachers can group them into several groups based on their English proficiency level. What was applied to Vietnam (Pham, 2005) can also be applied in the Indonesian context. Considering that one of the requirements of CLT is "real communication", Pham thus required conditions like directing real communication to answer the teacher in an "oral symphony", knowing that the students preferred to converse as a single large classroom instead of doing group work. Similarly, in China (Liao, 2000), the CLT model was complemented with innovations such as task-based exercises that stress teacher-assisted exercises which then impacted communicative competence. Liao adds that teaching can be started with listening exercises. Thus being the case, there is a need to increase usage of learning media such as audio, video, and pictures.

Conclusion

The communicative approach to language learning (CLT) is needed for teaching English in the Indonesian context, mainly because the approach stresses the importance of the communicative aspect of the language. However, research has shown that there are a few barriers in the implementation of the approach in several Asian countries, such that it brings up the idea that CLT should be modified to suit the local context. For the Indonesian socio-cultural context, teachers are challenged to be able to apply CLT so that it can be used within our socio-cultural context like large classrooms, the position of English as a foreign language, the custom of students learning in a traditional class, the custom of teachers using traditional teaching methods, the lack of quality teaching materials, changing curriculums, and the demands of a national examination.

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Using Inspiration Software for Multicultural Integration

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Abstract

Inspiration Software© was used as a teaching and learning tool to integrate Vietnamese students into an urban school in the United States. Since Inspiration Software allows students to switch back and forth between visual aids of concept map and outline text, both Vietnamese and American students successfully worked together on a *Friendship* writing project as a case study.

Introduction

Although the bilingual programs had been eliminated, in an urban middle school in the United States, there was about 20 Vietnamese students many of whom still could not understand some simple sentences such as "What do you want for lunch?" or "What do you think about the cold weather?" The school was rich with many cultural activities, from Vietnamese, African, and Irish festivals to art works and Vietnamese language displayed in hallways and offices. For example, written Vietnamese language was displayed next to every sign at the school from "Phong hieu truong" for "Principal's office" to "Thu vien" for "Library" or "Loi ra" for "Exit." At the main office, a bulletin board was filled with photos from a recent multicultural festival. However, the school principal still felt that the school culture and environment did not provide a right niche for these Vietnamese students to integrate. Although teachers and the principal had concerns about the isolation of Vietnamese students in the school, they were not sure how the school would integrate these Vietnamese immediately into the mainstream. Since these Vietnamese students were very quiet and passive in their classrooms, the principal asked if I could help integrate them into the school using technology as tools.

Friendship Unit Design

Inspiration Software© was selected as a teaching and learning tool to integrate the Vietnamese students into the school. Inspiration Software provided students tools to organize their thought and allowed them to express their ideas in a form of a diagram such as a *concept map*, *idea map*, *web* or *storyboard.* Most importantly, Inspiration Software allowed students to switch back and forth between graphical *concept map* and outline text. If both Vietnamese and American students could work together on a project, they could express their thinking in their own language while the graphical nodes with images could inform them about their partner's progress. By grouping students into a pair of a Vietnamese and an American student on a writing project with the theme *Friendship*, students could establish friendship through their partnership (See Figure 1).

Teaching for Understanding Framework (Wiske, 1998) was employed in developing the *Friendship* unit and Inspiration Software© as a teaching and learning tool. The Teaching for Understanding Framework (Wiske, 1998) provided four main elements for planning instructions: generative topics, understanding goals, understanding performances, and ongoing assessment. Friendship topic was generative because it was central to one or more domains, interested to both students and the teacher, and accessible for students to achieve the overarching goal.

Understanding goals were emphasized on the process first and then the skills and knowledge. By using ongoing assessment and understanding performances guideline, students were able to engage in discussion with their own knowledge or demonstrating their own understanding about

friendship for introductory performances. Once students were hooked and showed interest in the topic, instructions for guided inquiry performances were provided. For culminating performances at the end of this *Friendship* project, students had many opportunities to demonstrate their understanding for writing a compare and contract easy as well as to provide suggestions for continuing their friendship.

The goals were to help Vietnamese students overcome their isolation while encourage Americans to reach out and make friends with those who could not speak the same language and were very different from them. Since Vietnamese girls were very shy and would not join in discussions if there were boys in classes, classes were separated by gender and grade-level for this *Friendship* unit.

Integrating the Vietnamese bilinguals

The first week of this *Friendship* project was a challenging one. As soon as students entered the computer lab, Vietnamese and American children immediately clustered separately among themselves in their own group. Vietnamese girls were quiet and reserved. They did not show any interest in participating in the project. American girls, on the other hand, were laughing and chatting out loud as if they were in another class. The next day, boys too clustered in their own groups. Vietnamese boys, however, threw a few jokes back to their American friends using their body language. Still, some American and Vietnamese students did not want to look at the other groups' members. They turned their back to the table or looked out to the door and were ready to leave in any minute. Because American students were selected by their English teachers from different classes for this multicultural project, some of them kept asking each other out loud of why they had to be with these Vietnamese students since they already knew to speak English. As the teacher, I explained to them the purpose of this *Friendship* project and wanted to make sure that these American students were interested in learning how to write a *Friendship* essay as well as willing to make friends with these Vietnamese students. Once they understood the purpose of the project, they all expressed their willingness to participate in this project.

I began each class by telling students about my friends, and how friends helped me in life achieve my dream. As I shared my story with them, I asked them if they had anyone whom they could call friends. Using my stories as a hook to the topic, students were not hesitated to share their stories. As more and more of them willing to share their stories about friendship, students began to relax. In advancing their understanding from what they already knew, I asked them to write up their definition of *Friendship* and what *Friendship* meant to them without worrying about spelling or grammar (i.e., we would work on this later as their writing progressed). Since they were working on a topic that was familiar to them, they gradually participated in discussions and were willing to share their stories in classes. For their homework, I asked them to interview their parents, siblings or neighbors for their views about friendship. The next day, students also had opportunities to use different search engines on the Internet to define *Friendship*. They began to see how *Friendship* was viewed and defined from different sources.

Once they were more comfortable and relaxed in class, I grouped students into a pair of a Vietnamese and an American. Before pairing them, I informed American students that some Vietnamese students who absolutely could not speak English in classes. I asked American students if they were willing to take the challenge and were willing to work with a Vietnamese partner who could not speak English at all. I made sure that they understood the challenge and needed to be patient with these Vietnamese friends. I gave them an option of going back to their classroom or staying in my class to work on the project. All of them volunteered to stay. Although the process of pairing was difficult at first, we gradually learned to adjust to the situation. For example, an African American girl named Jenny who assured me that she could work with and help Tan overcome the language barriers because she had a cousin from Haiti who
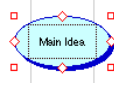
could not speak English when he first came here. After ten minutes, Jenny called me to work for her as an interpreter. I asked Jenny again if she still could work with Tan. She insisted that she still was able to work with Tan, so I advised her to use her body language. After a while, Tan ran away from Jenny, so I had to ask another Vietnamese girl to work with Jenny and assigned Tam to another partner. From that experience, I insisted that Vietnamese students who did not speak English to stay with their partner. Once they were put together as a team, they had to use either their body language or drawings to communicate with their partner and to share their writing.

Another American boy, for example, named Tom whom I thought did not want to be in the room on the first day surprised me by being the first one to raise his hand to accept the challenge of working with a Vietnamese partner. I asked him again if he understood the challenge that he was getting in. He reassured me that he understood the challenge and was willing to take risks. After a while, he could not communicate with his Vietnamese partner. Another Vietnamese boy who was sitting next to him offered help. I asked him to stop doing the interpretation job. I modeled a different way of communication by drawing pictures about a family, and pointed to him then to the picture. After a while, Tom got the idea and began to use his body language and drawings to teach his Vietnamese partner English. He thought of different ways to teach his partner such as dancing, moving his body, or making faces that they both laughed and enjoyed their time together. Noticeably, Tom took over the English as the Second Language (ESL) teacher's role.

I remembered when the project began, the School Curriculum and Instruction Director, Mr. Shea, asked me to pay attention to a boy named "Tam" whom, many teachers complained about, and that he had withdrawn and refused to participate in class. I thought he meant a Vietnamese boy who missed his country and did not want to participate in classes here. One day, as I walked in the hallway, Tom ran to greet and told me that he could not wait to go to my class. Later, I met with Mr. Shea to report my progress and told him about the incidence. I then told him that I could not find a Vietnamese boy whose name was "Tam" on my list. He laughed so hard and explained to me that the boy he warned me about was Tom. I was surprised by the name, so asked him if that was the boy who greeted me at the hallway. He nodded his head and laughed hard because he thought my mixed-up names was hilarious. We then realized that all Tom wanted was to have some recognition and some challenging assignments. By helping his Vietnamese partner, Tom discovered his significance and changed his attitudes toward schooling. I paid attention to Tom for the rest of project. He was always the first to come, worked hard on his writing assignments with his partner, and then the last one to leave.

Inspiration as a Learning Tool

When students were back to the computer lab for the second time, I provided students instructions for how to use Inspiration Software©. First, students launched Inspiration, and then modified the word "Main Idea" in the first balloon[1] with the topic "Friendship". They could change the size of the words in the **Size** submenu, or make the main idea Bold in the **Style** submenu by going to the **Format** menu at the top of the screen. Click away from the "Friendship" balloon, they had to create two more balloons in which one was entered with the name of the American and the other one with the Vietnamese partner (See Figure 1). After that, they might change oval balloons to shapes to their liking using the symbol palette. Once students were happy with the shapes of their balloon and styles of the "Friendship" topic and their names, they learned how to connect balloons to the main topic balloon. First, they clicked on the **Link** icon at the top of the window,

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[1] When Inspiration was first launched, the default style was an oval like this one with the word "Main Idea" when opened.

and then clicked on their name balloon, then clicked on the "Friendship" balloon. By now, they could see that the topic "Friendship" was linked to both of their names. Following the same above procedure, each of them took turn to create three more balloons for their sub-topics such as "trust", "honesty", and "sharing" (Vietnamese: tin tưởng, trung thực, chia sẻ), etc. I advised each American and Vietnamese partner to use a different color for their balloons. To fill color, students clicked on balloons, then clicked on the **Effect** menu at the top of the page and then selected a color from the **Fill Color** submenu. If they wanted to color all of their balloons of a similar type with the same color, they could hold the Shift key down and click on each of the other balloons, then selected **Fill Color**.
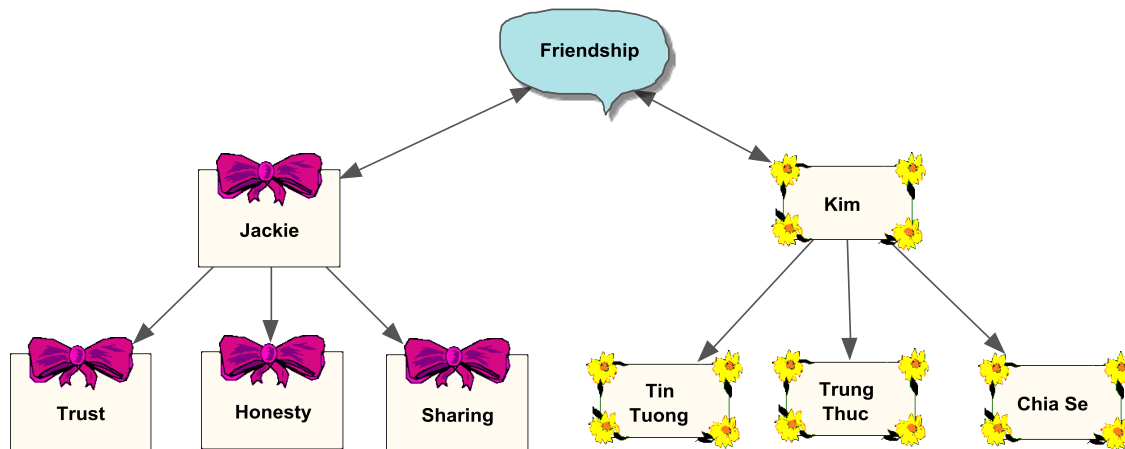

Figure 1: Kim and Jackie Friendship Inspiration Graphical Balloons

After I demonstrated how Inspiration software worked, I redistributed their first day's assignments back and asked them to review their papers for refreshing their memories. Once they began to use Inspiration balloons for entering information from the first draft of their Friendship essay, I noticed that Kim, a Vietnamese sixth grade girl who would show everyone on the first day that she was not interested and did not want to do anything with this project nor want to talk to her partner, began to engage in the discussion with her partner. I paid attention to Kim because I noticed how upset she was on the first day. At the end of the first class, I checked in with Jackie, her partner, to make sure that she was fine in working with Kim. She told me that it was so hard for her to work with such an upset and quiet girl. She tried to ask Kim many questions, but did not receive any responses. I asked Jackie if she understood why Kim was so unhappy. She said it could be that Kim had some personal problem or story that she could not understand. I asked Jackie if she knew why I chose the topic *Friendship* for them. Jackie understood and reassured me that she would try to see how to make a new friend with someone who was different and seemed to be difficult to be with. At the second class, after I showed them how organizing their thoughts with Inspiration graphical tools, I noticed that Kim was willing to organize her thought by creating graphical balloons and typing her thinking about friendship in Vietnamese. Because Inspiration Software© allowed them to switch their graphical writing into an outline, I noticed that Kim began to show some interest with her work and began to talk to her partner using her body language.

Since students continued to work on their *Friendship* essays in their own language, they had opportunities to compare their Inspiration balloons in both languages side-by-side. I noticed how building partnership using Inspiration software helped transform student's attitudes toward strangers in a strange land. For example, an eighth grade boy loudly told me that he grew up in America and his English was good; therefore, he did not need to be with these Vietnamese

students. While I was explaining to him and other students about the structure of the class, he shot a balled-up piece of paper at me and expected me to react. As I observed this type of behaviors in other classrooms, I did not react to what he expected. Instead, I calmly told him that I did not appreciate his disrespectful behavior. I then asked him to help me understand what he thought Vietnamese students should do to learn his culture, tradition, or language. After he suggested some ideas, I asked him if he could help me pick up the balled-up piece of paper that he threw at me earlier and put that ball into the trash can. He did. Because I did not send him out to the hallway for detention as he expected, he was puzzled and quiet for the rest of the class. I wanted to send a message to him that I did not give up on him despites of his bad attitudes. I reiterated my explanations on issues and expectations for the project to the class and then asked him again if he understood my explanations. At the last day of our project, this boy told me that he would go down to my computer lab and wait for these Vietnamese students to come to learn with him although he knew that this class would be over then.

As the project went on, we faced many up-and-down moments. One of the problems was the type of control management system in the computer lab. The school had two labs, one PC and the other Mac. There were two different computer teachers who were in charge of each lab. The Mac lab was set up with a central control system where the teacher could control every computer in the lab. They could direct all students to get access to the Internet or to a particular website, allow students to look at the work of their classmate as an example on their own computers, or turn on or off a particular computer or a particular program. With the control management system, students could not get off the work and get into computer games or the Internet anytime they want. Obviously, the control management system helped teachers solve many classroom management problems. However, this system helped only if the central control system did not crash. One day it crashed, my classroom was so chaotic because students who could not open their Inspiration Software© began getting onto the Internet or computer games until I shut their computers down.

So for the next class, I moved my class to a PC lab where the central control system was not installed. I made up a rubric and a learning contract with students. I provided a timeline for each specific task, and explained in details for each task. We reviewed the rubric and the learning contract to make sure that students agreed with the timeline and tasks. If any students disagreed with a specific item, we worked out a compromised agreement. When we all agreed with the rubric and timeline, each student was assigned to a particular computer for the rest of the project. Once students understood the learning contract and rubric, they took over their own responsibility for learning. At the beginning of each class, we reviewed and discussed comprehensively about tasks that we had to do for the class. Any question or concern would be discussed during this period. Once students began to work on their *Friendship* project, I became more of a coach than a teacher.

Students' voices

The most rewarding experience of working on this *Friendship* project was seeing positive transformation from students. Because students interviewed their parents, friends and neighbors (people they knew) about their views on friendship, students began to understand that people could view friendship similarly or differently from theirs. They, however, also understood that friendship was a process of building on a relationship with time, not something happened overnight. As they kept writing about friendship while searching for definitions of friendship on the Internet, many students were quite surprised to see how friendship's definition was vastly different, from genres to communities and nations. They discovered and shared with each other many good websites from other countries such as **Friendship Writing** website from Melbourne, Australia, retrieved from http://www.friendship.com.au/writing. At this website, for example,

students found "True Friends" poem in which the author Ashley Montgomery wrote, "A true friend never walks away." Students discussed about this view in class and explained why they thought this view would be similar of different from their view. They draw up a chart to compare and later typed in their compare and contrast essay through Inspiration. Although students continued to work on their essays in their own language, they began to see how their thoughts were similar to their partners. As they began to compare their Inspiration balloons and outlines to each other, American students taught Vietnamese saying things in English. In return, Vietnamese students taught their partners speaking Vietnamese. As they giggled when trying to speak a different language, friendship was little by little developed within their partnership.

On the last day of the project, many students did not want to part. They wrote recommendation letters to the principal. For example, American students wanted to have Vietnamese as their option for the second language, as they wrote, "so that we will be able to converse with these Vietnamese kids" or "We want to be able be friends with these Vietnamese." On the other hand, Vietnamese students wanted their American friends to continue on speaking and teaching them English. They also wanted to develop a school website with some ideas such as School Friendship Culture.com (i.e., just an idea), and most of all, they asked if they could have this *Friendship* program again. This is only my pilot writing project that used Inspiration as a teaching and learning tool to integrate bilingual students into an urban middle school in the United States. The effectiveness of this tool needs a more careful study and research.

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Editor's Note: The protection of authors and inventors by copyright and patents gives them exclusive rights to sale of their products for a designated period of time. Often there are conflicts and gray areas that require legal resolution. The laws and their enforcement varies for different countries. This paper explores the copyright law as it is applied in India.

Infringement of Copyright: Judicial Analysis

P.R.L. Rajavenkatesan[2]

Madras, India

Copyright is a right which is rest with the person who created a particular work. It's a monopoly right of creator of copyright. In case of copyright work, author is a first owner of copyright.[3] The Copyright Act 1957 has given certain exclusive rights to author.[4] Author may become an owner of copyright, but owner need not necessary to be author of work. Thus, if any person exploits the copyright work of owner without his permission, then it will come under infringement of copyright except certain circumstances.[5] The Copyright Act 1957 stated about infringement of copyright in wider perspective. According to the modern technology it is much needed to give definition to infringing copy. That's why Copyright Act 1957 has contained provision regarding infringing copy.[6] Copyright in a work may be infringed by copying that work. Copying can be done in three ways: (i) direct copying (ii) indirect copying; and (iii) subconscious copying.

Direct Method of Copying

Reproduction of the plaintiff's work by defendant falls under this category. Apart from this, if defendant copies the plaintiff's work with some minor additions or alterations, infringement will be said to have taken place. If substantial part of the work copied by the defendant, then infringement will be raised. Lord Reid in *Ladbroke v William Hill* held that 'the question whether the defendant has copied a substantial part depends much more on the quality than the quantity of what he has taken.'[7] But law is different in case of cinematograph film and sound recording. A

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1. Section.17. First owner of copyright

2. Section.2 (d) "author' means,-

   (i) in relation to a literary or dramatic work, the author of the work;

   (ii) in relation to a musical work, the composer;

   (iii) in relation to an artistic work other than a photograph, the artist;

   (iv) in relation to a photograph, the person taking the photograph;

   (v) in relation to a cinematograph or sound recording the producer; and

   (vi) in relation to [any literary, dramatic, musical or artistic work which is computer-generated, the person who causes the work to be created;]

3. Section.52. Certain acts not to be infringement of copyright.

4. Section.2. (m) "infringing copy" means,-

   (i) in relation to a literary, dramatic, musical or artistic work, a reproduction thereof otherwise than in the form of a cinematographic film;

   (ii) in relation to a cinematographic film, a copy of the film made on any medium by any means;

   (iii) in relation to a sound recording, any other recording embodying the same sound recording, made by any means;

   (iv) in relation to a programme or performance in which such a broadcast reproduction right or a performer's right subsists under the provisions of this Act, the sound recording or a cinematographic film of such programme or performance, if such reproduction, copy or sound recording is made or imported in contravention of the provisions of this Act;

5. (1964) 1 WLR 273

narrow copyright protection is accorded to a film /sound recording than for literary, dramatic or artistic work. The reason perhaps could be that they have to be original to satisfy the test of copyright ability, whereas the requirement of originality is absent for claiming copyright in cinematograph films/sound recordings.[8] In *CBS Australia Limited and Others v Telmak Teleproducts (Aust) Pty Ltd,* [9]the court held that unless there had been a copying f the whole or part of the plaintiff's film itself ,in the sense of copying of the particular recording of that film, there could not be any infringement of the copyright. The re-shoot of the film could not be said to be the copy of the film for the purpose of infringement.

(ii) Indirect Method of Copying

In case of indirect copying of the work of a person by changing its form example if a novel is turned into a play, which is in turn converted into ballet, the same will apply.

(iii) Subconscious Method of Copying

Copying may occur subconsciously where a person reads, sees or hears a work, forgets about it but then reproduces it, genuinely believing it to be his own.[10]

Ideas Are Not At All Protectable

The following is summary of the decided case in India on the question of copyright.[11]

1. There can be no copyright in an idea, subject, matter, themes, plots or historical or legendary facts and violation of the copyright in such cases is confined to the form, manner and arrangement and expression of the idea by tile author of the copy-righted work

2. Where the same idea is being developed in a different manner, it is manifest that the source being common, similarities are bound to occur. In such a case the courts should determine whether or not the similarities are on fundamental or substantial aspects of the mode of expression adopted in the copyrighted work. If the defendant's work is nothing but a literal imitation of the copyrighted work with some variations here and there it would amount to violation of the copyright. In other words, in order to be actionable the copy must be a substantial and material one which at once leads to the conclusion that the defendant is guilty of an act of piracy.

3. One of the surest and the safest test to determine whether or not there has been a violation of copyright is to see if the reader, spectator or the viewer after having read unmistakable impression that the subsequent work appears to be a copy of the original.

4. Where the theme is the same but is presented and treated differently so that the subsequent work becomes a completely new work, no question of violation of copyright arises.

5. Where ,however ,apart from the similarity appearing in the two works there are also material and broad dissimilarities which negative the intention to copy the original and the coincidences appearing in the two words are clearly incidental no infringement of the copyright comes into existence.

6. *Star India Private Limited v Leo Burnett (India) Private Limited* (2003) 27 PTC 81.

7. (1987) 9 IPR 440.

8. *Francis Day v Bron* (1963) Ch 587.

9. *R.G.Anand v Deluxe Films* AIR 1978 SC 1613.

6. As a violation of copyright amounts to an act of piracy it must be proved by clear and cogent evidence after applying the various tests laid down by decided cases.

7. Where however the question is of the violation of the copyright of a stage play   by a film producer or a Director the task of the plaintiff becomes more difficult to prove piracy. It is manifest that unlike a stage plays a film has a much broader prospective, wider field and a bigger background where the defendants can by introducing a variety of incidents give a colour and complexion different from the manner in which the copyrighted work has expressed the Idea. Even so, if the viewer after seeing the film gets a totality of impression that the film is by and large a copy of the original play, violation of the copyright may be said to be proved.

In case of *Cherian P Joseph v Prabhakaran*[12] the court held that copyright in a work is not infringed, if someone takes the essential idea from it and develops his own work. The test laid down in *RG Anand v Deluxe Films* was applied by Kerala High Court in *R Madhavan v SK Nayar*.[13]The Court held that no prudent person who had seen the film and read the novel would from the impression that the film Avalute Ravukal and its theme, scens or situations were copied from the novel Alayazhi. Not only was there no resemblance or similarity in the theme, scenes or situations of the film and the novel, the material incidents ,situations and scenes portrayed in the film were substantially and materially different from the situations ,incidents and scenes portrayed in the plaintiff's novel.

Judicial Analysis of Infringement of Copyright

Copyright in a work is also infringed where any person without the prior permission of the copyright owner permits for profit any place to be used for the communication of the work to the public, where such communication constitutes an infringement of the copyright in the work. If the person is not aware of infringement of copyright then that person would not be deemed as an infringer.[14] Importation of infringing copies of the work into India also results in infringement of copyright. However, import of one copy of any work for the private and domestic use of the importer is allowed.[15]Some time different type of copyright infringement may be raised like example whether non-payment of the money agreed and mentioned in the agreement on assignment of copyright amounts to infringement of copyright? The question came before Delhi High Court in *Reoti saran Sharma v Numero Uno International*.[16]In this case the plaintiff agreed to write the dialogues for the defendant for his TV serial, The Great Maratha. A consolidated fee of Rs 20,000/- per episode was fixed. The defendant failed to make a payment for some of the episodes written by the Plaintiff. The plaintiff filed a suit contending that the copyright in rest of the episodes for which payment has not been made, has not vested in the defendant, and thus the telecast of the serial was an infringement of his copyright .The Court concluded that the copyright of the plaintiff had vested in the defendant, and there was no infringement of the right of the plaintiff. The plaintiff could file a case for the enforcement of the terms of the contract under general law of contract, and not under the copyright Act 1957. Apart from this, the reproduction of a literary, dramatic, musical or artistic work in the form of cinematograph film is also deemed to be an infringing copy.[17]*Gramophone Company of India Ltd v Super Cassette Industries Ltd,*[18]

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10. AIR 1967 Ker 234.

11. AIR 1988 Ker 39.

12. Section.51 of copy right Act-1957.

13. Section.53. Importation of infringing goods.

14. (1995) PTR 132 (Del).

15. Section.51 of copyright Act 1957.

the defendant launched a version recording of the songs of popular Hindi movie Hum Aapke Hain Kaun.The Plaintiff raised the contention that the defendant by creating version recording infringed the copyright of the musical Work in the film. After considering the fact that the plaintiff made the records from the plates given by the owner of the film, the Delhi High Court held:

The Plaintiff nowhere claims that the records made by the defendants "embody" the recording in any part of the sound track associated with the film. Rather the records so made by the defendants are only a version recording by using another voice or voices and with different musicians and arrangers. In short the records in question embody no part of the sound track of the film. Thus the records so made do not prima facie fall within the definition of "infringing copy.

Violation of Neighbouring Rights

 Under Section 37 of Copyright Act, 1957 dealt with infringement of broad casting rights.[19]In case of broadcasting reproduction right, no body can rebroadcast it without licence or consent of owner of right. In case of performer's right ,under section 38 of the Copyright Act stated that a person is deemed to have infringed the performer's right if he does ,without the consent of the performer ,any of the following acts in respect of the performance or any substantial part there of, makes a sound recording or visual recording of the performance etc. In certain circumstances particular act would not amount to infringement of broadcasting or performer's right. Some of the cases are discussed by our Indian judiciary to understand about position of performer in India under copyright Act. In particular case the Bombay High Court has held that performers did not have copyright in their performances.[20]

Exception from the Infringement of Copyright

The copyright is an exclusive monopoly right of copyright holder. But in certain circumstances this valuable right may be rest with public and public domain for the purpose of welfare of people. In the situation monopoly right of copy right holder is deemed to be considered as worked off. If the public exploit the copyright work without getting consent from copyright holder in case of public interest it may be considered as fair use. In case of fair use doctrine creator of copy right

16. (1995) PTR 64.

17. Section. 37. Broadcast reproduction right.-

   (1) Every broadcasting organization shall have a special right to be known as "broadcast reproduction right" in respect of its broadcasts.

   (2) The broadcast reproduction right shall subsist until twenty-five years from the beginning of the calendar year next following the year in which the broadcast is made.

   (3) During the continuance of a broadcast reproduction right in relation to any broadcast, any person who, without the licence of the owner of the right does any of the following acts of the broadcast or any substantial part thereof,-

      (a) re-broadcasts the broadcast; or

      (b) causes the broadcast to be heard or seen by the public on payment of any charges; or

      (c) makes any sound recording or visual recording of the broadcast; or

      (d) makes any reproduction of such sound recording or visual recording where such initial recording was done without licence or, where it was licensed, for any purpose not envisaged by such licence; or

      (e) sells or hires to the public or offers for such sale or hire, any such sound recording or visual recording referred to in clause (c) or clause (d) shall, subject to the provisions of section 39, be deemed to have infringed the broadcast reproduction right.

18. Fortune Film International V Dev Anand AIR 1979 Bom .17.

has no power to enforce his monopoly right against third party. This fair use doctrine is a crux of the copyright Act.1957. Because its lead to give benefit to public and prevent copyright holder to take action of infringement in case exploitation of his work without obtaining permission from him. This fair use doctrine is based on public policy. The concept of public policy varies from place to place and may change time and again according to the social needs of a particular society. It is because of this reason that the doctrine of public trust has never remained static like example In US case *Rosemant Enterprises Incorporation v. Random House Incorporation,*[21]the defendants had unauthorized duplicated the portion of the plaintiff's biography of "Howard Hughes" did not violate the copy right laws and the defendants used it fairly. The Court found that public had an over riding interest in that prominent public figure. In Indian copy right Act 1957 deals about statutory exceptions.

(i)   Fair Dealing for Research and Private Study and criticism

Usually ,unauthorized use of copy right work would be deemed as infringement of copyright but in case of research, private study are permitted as fair use[22]. Everybody can use it and exploit it only for above said purposes only. The term fair use is nowhere defined in the Act. It may differ from case to case according to fact and circumstances of it. In case of infringement action, the test is to find out whether the use is likely to harm the potential market or the value of the copyrighted work .If any body makes single copy for private use it will come under purview of fair use.[23]The Indian copyright Act provides that a fair dealing with literary , dramatic ,musical or artistic work for the purpose of criticism or review, whether of that work or of any other work shall not constitute an infringement of copyright in the work.[24] The purpose of this section is to protect the commentator, reviewer who wants to use extracts from a work to illustrate his review, criticism or comment. In case of Hubbard v Vosper Lord Denning , LJ's opinion that it is not a fair dealing for a rival in the trade to take copyright material and use it for its own benefit , the court considered that the availability of the defence of fair dealing depended on the motive with which the copy was made.

The Copyright Act 1957 provides that no fair dealing with a literary, dramatic, musical, and artistic work for the purpose of reporting current events in a news paper, magazine or similar periodical constitutes an infringement of the work.[25] In case of current event, the event reported must be current, and not matter of history. In case of current events, the work must be used for reporting current events, and not for editorial or other purposes. The copy right Act 1957 provides that reproduction of a literary, dramatic, musical or artistic work or an adaptation of it for the purpose of a judicial proceeding or for the purpose of a report of judicial proceedings does not constitute an infringement of copyright.[26] The reproduction of a legislature's work also comes under purview of fair use exception.[27] The reproduction of any literary, dramatic or musical work in a certified copy made or supplied in accordance with any law for the time being in force is not an infringement of the copyright in such work. Another thing is that reading or recitation in public of any reasonable extract from a published literary or dramatic work shall not constitute an infringement of copyright, provided that the act is accompanied by an acknowledgement as required under proviso to s 52(1).You may ask the question that what is meant by 'reasonable

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19. 1996 IInd Cir F 366, 2 ND 303.

20. Section.52 (1)(a)(i) of Copy right Act.1957.

21. *Civic Chandra v Amminic Amma (*1996) PTR 142.

22. Copyright Act 1957,s 52 (1)(a)(ii).

23. Copyright Acts 52 (1)(b)(i).

24. The Copyright Act 1957,ss 52 (1)(c) and 52 (2).

25. The Copyright Act 1957, ss 52 (1)(d).

extract' is a question of fact, impression and degree. When u examine that whether an extract is reasonable, it is pertinent to take into account the surrounding circumstances ,in particular the amount and importance of the part taken and any competition against or harm done to the copyright owner.[28]If copyright work used for the purpose of educational, it comes under fair use of copyright work which is already copyrighted.[29] The crux of Section (1)(v)(ii) of the Copyright Act 1957 has been discussed in the Delhi High Court.[30] In this case the court held that the sari worn by Rani Mukherjii in film "Bunty Aur Bubli" was violation of infringement of Copyright of the designer.

Another important fair use is that the performance of a literary, dramatic or musical work by the staff and students of the institution in the course of the activities of an educational institution is not an infringement of the copyright if the audience is limited to such staff and students, the parents and guardians of the students and persons directly connected with the activities of the institution.[31]In concept of fair use doctrine, making of sound recording in certain circumstances are a most important one. Making of sound recordings in respect of any literary, dramatic or musical work is not an infringement of copyright in such works if such sound recordings of that work have been made by or with the licence or consent of the owner of the right in the work[32]; and the person making the sound recordings has given a notice of his intention to make the sound recordings. In the situation royalties should be paid in respect of all such sound recordings to be made by him, at the rate fixed by the copyright Board in this behalf. That the above said permitted act also is subject to certain conditions .That is, No alteration shall be made which have not been made previously by or with the consent of the owner of rights etc. We may notice the judicial decision recording this provision to understand further more about crux of this section. In the case of *Gramophone Company of India Ltd v Super Cassette Industries Ltd,[33]* defendant launched a version recording of the songs of popular Hindi movie Hum Aapke Hain Kaun .The Plaintiff raised the contention that the defendant by creating the version recording infringed the copyright of the musical work in the film. But in this case the Delhi High court held that the plaintiff nowhere claimed that the record s made the defendant 'embody' the recording in any part of the sound track associated with the film. Rather the records so made by the defendants were only a version recording by using another voice or voices and with different musicians and arrangers, which fall within the scope of s 52 (1) (j). In the case of *Super Cassette Industries Limited v Bathla Cassette Industries Pvt Limited,[34]*the court held that reasonable alteration is necessary for adaptation of the work. But a change of a singer in particular is an alteration which cannot be said to be reasonably necessary for the adaptation of the original work to produce the sound recordings of the plaintiff. Causing of a recording to be heard in public[35], performance of a work by Amateur Clup or Society[36], Reproduction of Articles on current Topic recording economic ,political, social, or religious topics in a newspaper, magazine or other periodical

26. Hugh Laddie *et al*, The Modern Law of Copyright, 1980, p 78.

27. The copyright Act 1957, Section 52(1)(g).

28. *Suneet Varma Design Pvt.Ltd & Others v. Jaskirat Singh Narula & Anr* 2007(34) PTC 81(Del).

29. The Copyright Acts 52 (1)(i).

30. The copyright Act 1957,s 52(j).

31. (1995) PTR 64.

32.(2003) 27 PTC 280 (Del)

33.The copyright ACT ,s 52 (1)(K),

34. The copyright Act, s 52 (1)(l).

,unless the author of such article has expressly reserved to himself the right of such reproduction.[37]

Publication of Report of a lecture in periodicals is not an infringement of copyright[38] but that the exception is available for the publication of a report of the lecture in delivered in public, and not the entire lecture. Addition to above said, the publication must be in a newspaper, magazine or other periodical, and not in a book or some other work .Reproduction for the purpose of use in libraries and reproduction or publication of any matter in official Gazette, Act of Legislatures, Judgment of courts etc are come under the fair use of copyrighted work. In *SK Dutt v Law Book Co*, the Allahabad High Court observed: Decision reported in law reports is 'common property' for commentators on the law and they must per necessity have to have recourse to them because without reference to them no commentators can give his readers a correct idea of the law.[39] In *Eastern book Co v Navin   J Desai* also, the Delhi High court held that there was no copyright in judgments, and they were in public domain once published. The Delhi High Court held that the work to be a original should not be copied from other works[40]. Another major exemption in copyright work is that the publication of act of legislatures, making or publishing of a painting ,photograph ,etc of a work of architecture, making or publishing of a painting ,photograph etc of a sculpture or other artistic work. Recently the Supreme Court has passed a judgment with regard to infringement of Copyright. In which it's stated that by introducing certain inputs in a judgment delivered by a court has become original work[41].

Conclusion

Nowadays infringement of copyright is serious issues due to technological development. Because it is not an easy job to Court of law to decide the infringement of copyright case due to the reason of technological development. Even if it is so, the Court are trying to give some new uniform standard in cases regarding copyright infringement but till this time also Indian courts are following the judgment of *R.G.Anand v. Delux Film Ltd* [42]which delivered by the Supreme Court of India in the year 1978. It is also important to bear in mind that even if we have technologically well sound manner, still Indian judiciary are following the principle which was contained in above said case. In case of copyright infringement, Complainant should prove that defendant has copied substantial nature of work which was already created by the complainant. The Copyright Act 1957 has considered the public interest on the one side and private interest on the other side. Though copyright is a monopoly right of copyright holder, in case of public interest that the monopoly right can be prevented through the Copyright Act 1957. It is also true that monopoly right may not be enjoyed in case of public interest. Therefore it is the duty of Court of law to give some space to public to exploit the copyrighted work without getting consent from copyright holder keeping in mind of dissemination of knowledge and free flow of information.

35.Section.52(1)(m) of copy right Act .1957

36. Section 52 ()(m) of copyright Act 1957.

37. AIR 1954 All 570.

38. *Rupendra Kashyap v. Jiwan Publishing House* (1996) PTC 439(Del).

39. *Eastern Book Company & Ors v. D.B.Modak & Others* PTC (1) 2008 Vol.36.

40. AIR 1978 SC 1613.