INTERNATIONAL JOURNAL OF INSTRUCTIONAL TECHNOLOGY AND DISTANCE LEARNING

July 2006
Volume 3 Number 67

ISSN 1550-6908

PUBLISHER'S DECLARATION

The International Journal of Instructional Technology and Distance Learning is refereed, global in scope, and focused on research and innovation in teaching and learning.

The Journal was established to facilitate collaboration and communication among researchers, innovators, practitioners, and administrators of education and training programs involving instructional technologies and distance learning. The editors and peer reviewers are committed to publish significant writings of high academic stature.

The initial year of publication was funded by the TEIR Center, Duquesne University. The Executive Director of the Center, Lawrence Tomei, served as Publisher. Additional support was provided by DonEl Learning Inc. and freely donated time of the editors and peer reviewers.

Donald G. Perrin
Executive Editor

International Journal of
Instructional Technology & Distance Learning

Vol. 3. No. 7.

ISSN 1550-6908

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Editorial

Is Education the Solution?

Once upon a time, I believed education was the solution to most of the world's problems. It could overcome poverty by preparing people for better paying jobs. It could solve conflicts by using knowledge and communication tools for problems solving. And education could resolve social ills such as prejudice, violent crimes, and issues of health and nutrition.

My world was simplistic. It did not take into account human factors or the 7-deadly sins. It did not allow for change resulting from innovations and paradigm shifts. It did not consider the impact of natural disasters like earthquakes, tsunamis, and hurricanes. And there was no consideration of people created problems like global warming or warfare. Half a century later I see a world in distress. It is no longer life in a small town, but how to live in a global environment. Our daily lives are impacted by global economics, politics, and war.

Education is trying to reinvent itself for a world that is ever changing. Instead of preparing us for the future, it continues to react to the needs of the present and recent past. By the time these ideas are imbedded into curriculum, they are long since obsolete .It is like the freeway that just opened that was designed for the world as it was 10 years ago.

The infrastructure and power tools exist for education and training to produce interactive multimedia rapidly at unprecedented levels. We have the design and production tools; the delivery and implementation tools, and substantially improved tools for evaluation. But even education has conflicts between its conservative base and proponents of learning technologies. We are confronted with a dichotomy when we need both to work side-by-side. We need *all* of our traditional and innovative resources working together to solve today's problems. And the first problem is education itself. It must be oriented to the world we live in if it is ever to solve most of the world's problems. It must provide tools to prepare the next generation for the world that is becoming, not the one that is past. It must address specific economic and social needs to ensure jobs, secure and healthy communities, and harmonious relationships between peoples that are different. We must learn to celebrate differences in culture, language, and color.

Is my goal for education just a dream?

Editor's Note: One early criticism of distance learning was loss of eye contact and sense of community. Guy Bensusan and others showed that peer interaction and peer learning could play a significant role in building a sense of community and support for learning. This article s explores the relative significance of various factors that build student motivation and participation and in turn facilitate learning and retention.

An Empirical Examination of Sense of Community

and its Effect on Students' Satisfaction, Perceived Learning Outcome, and Learning Engagement in Online MBA Courses

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Abstract

This article aims to examine the relationships between self-reported sense of community and the level of teaching facilitation, social presence, and technology use levels in online courses. This study concluded that all three aspects are predictors of sense of community, with teaching facilitation being the strongest predictor. The study also revealed that sense of community is significantly associated with course satisfaction, perceived learning outcome, and learning engagement.

Introduction

The past several years have witnessed the exponential growth of courses offered online, which is increasingly becoming a significant portion mainstream higher education. Sixty-five percent of schools offering graduate face-to-face courses also offer graduate courses online (Allen & Seaman, 2005). Along with this mainstream, online MBA programs have seen a steady growth in student enrollment during recent years while enrollment in traditional in-residence MBA programs have experienced a decline (Magjuka, Shi, & Bonk, 2005).

However, such dramatic change in the higher education landscape does not come without concerns. Two major issues related to web-based education—retention and quality—have been of central concern for online educators (Rovai, 2002a, 2002b, 2002c). Driven by such concerns, it is not surprising that there has been growing enthusiasm toward building sense of community in online learning. It is believed that great benefits of an online community are its potential to facilitate greater information flow and knowledge sharing among participants, and stimulate innovation and creativity by cross-pollinating diversified perspectives and expertise in a shared space (Blunt, 2001; Bonk, Wisher, & Nigrelli, 2004). The mutual understanding and shared values developed from such communication and interaction in a community will eventually benefit online learners through the availability of greater support and socio-emotional well being (Wellman & Gulia, 1999; Rovai, 2001).

While it seems that the value of virtual learning communities is readily accepted by many practitioners, empirical studies seemed unable to produce consistent results regarding the role of sense of community in teaching and learning (Misanchuk, 2003). Based on the current status of research, a few scholars point out that there is a lack of clear directions on how to build learning communities based on empirical studies (Lock, 2002). Bonk et al. (2004) claim that few research studies have examined the formation of online communities, and many factors remain unknown with regard to their impact on sense of community.

The purpose of this study was to add this empirical piece to the existing knowledge of building learning communities in online courses though examining the relationship between sense of

community and other pedagogical, social, and technical factors in online courses. The study will focus on the following research questions:

1. What was the relationship between sense of community and technology use, online facilitation, and social presence?
2. Did sense of community contribute significantly to course satisfaction, perceived learning, and learning engagement?

Literature

Although online learning communities have been defined in different ways, the majority of the definitions share common elements such as shared goals, connectedness, belonging, mutuality, collaboration, and community boundaries (Shea, Swan, & Pickett, 2002). In this paper, an online class learning community is defined as the participants of an online course have "a feeling that members belong to each other, a feeling that members matter to one another and to the group, and a shared faith that member's needs will be met through their commitment to be together"(McMillan, & Chavis, 1986. p. 9). This definition reflects two major dimensions of a community. One aspect is socio-emotional ties that hold the community members together. Another aspect is the instrumental purpose for a community to exist to satisfy the needs of individual development and growth in that community. In this article, *online class community*, *virtual learning community*, and *online classroom community* will be used interchangeably.

Although educators may not agree on the role of technology in building learning communities in a traditional setting, there seems to be a consensus regarding the critical role of technology in the growth of a virtual learning community. Existing literature highlights several important roles of technology. First, an effective technology infrastructure provides a gateway to a virtual community because it offers a basic gathering and communication space for members. For a healthy growth of a virtual community, a failure proof, widely accessible, and easy to use technology is also required. (Hill, 2001; Kearsley, 2000; Lock, 2002).

Second, the role of technology will be in its full play only when pedagogies are designed with the aims of fully utilizing its media features to promote sense of community (Schwier, 2002). Research suggests that carefully designing a technology-enriched environment through enhancing sociability and usability of technical systems fosters community development (Moller, 1998, p.120; Preece, 2000, as cited in Lock, 2002). For example, empirical evidence suggests the unique technical attributes and sociability of each technology can be used to foster virtual community building in different ways. Synchronous communications, such as text-based chat discussions and video conferencing, have the merits of providing real-time feedback and enabling highly interactive, spontaneous dialogue that will contribute significantly to sense of belonging to an online class (Schwier, & Balbar, 2002). On the other hand, asynchronous communications allow time for students to reflect on their learning and community experience. Sense of community may be enhanced with deeper dialogue and continuous discourse without time or geographical limitations (Schwier, 2002; Duffy, Dueber, & Hawley, 1998).

According to Berge (1995), one of the important roles of online instructors is to use a variety of strategies to foster students' understanding of critical concepts and principles and develop skills. Such tasks include offering timely and effective feedback, encouraging students' knowledge construction through facilitating interactive discussion, designing a variety of learning experiences, and referring to external resources or experts in the field. Instructor mentoring and support have proven to be one of the critical predictors for effective online learning (Peltier, Drago, & Schibrowsky, 2003). Research also found a close relationship between teacher behaviors and the development of virtual learning communities in online courses (Shea at al., 2002). The students' sense of their instructors' teaching presence, the effective instructional

design and organization, and directed facilitation of discourse is strongly associated with students' sense of community.

A critical aspect of online facilitation is to foster interaction and collaborative learning in an online community. In a study that examined the community building process in online graduate school courses, Brown (2001) identified that allocating sufficient time and placing high priority in course interaction and dialogue are critical conditions for community building. Both quality and quantity of online interaction should be emphasized in the process of community building (Rovai, 2002c). An online discourse that is constructed on shallow interaction or lacks in-depth dialogue is unlikely to foster a sense of community in online courses (Liu, 2006). Facilitating small group activities or collaborations in an online course enables an interactive environment through engaging students in meaningful team-based learning activities (Rovai, 200b). Thus, intentionally building collaborative assignments and electronic sharing activities will help to foster a sense of belonging together with a shared learning experience (Barab, Thomas, & Merrill, 1999; Anderson, Rourke, Archer, & Garrison, 2001). Studies have found that simple tasks—such as requiring students to make a regular post to interact with a newsgroup or take part in decision making on community rules—may also assist in facilitating a sense of community (Rice-Lively, 1994).

Social presence is defined as the degree of the feelings of the salience of the other person in the interaction (Rourke, Anderson, Garrison, & Archer, 2001). It is believed that social presence is a precondition for developing social bonding, impression formation, and interpersonal relationships for meaningful interaction, group cohesion and collaboration (Kirschner & Van Bruggen, 2004). In an online environment, the diminished socio-contextual cues present an obstacle for community building and carefully planning a support structure is needed to heighten the level of social awareness to enhance a sense of community (Rovai, 2002). However, empirical studies indicate that inexperienced online instructors usually lack skills to enhance social awareness and neglect the development of social presence in online courses (Conrad, 2004). Wegerif (1998) asserts, "Many evaluations of asynchronous learning networks (ALNs) understandably focus upon the educational dimension, either learning outcomes or the educational quality of interactions, overlooking the social dimension which underlies this." (p.1).

Method

Research Setting

The study was conducted in an accredited online MBA program at a top-ranked business school at a large Midwestern university. The program was designed for professionals who wished to earn their MBA degree while continuing their employment. The faculty pool was drawn from full-time, tenured faculty members from various departments of the business school. The program has grown to include more than 1000 students in just a few years.

Instrument Development

A program survey related to students' perceptions of the online learning experience was used to assess students' satisfaction with online learning experiences and their sense of online community. The 23-item survey questionnaire contained a five-point scale with Likert type questions about student perceptions and attitudes toward pedagogical, technical, and social aspects of learning online. The internal reliability of the survey, Cronbach's alpha, was reported at .89.

Students' sense of community (SoC) (Appendix I) was measured through six items selected from Rovai's (2002) SoC scale that measured the *connectedness* dimension of SoC. The rationale we chose to focus on—affective components (e.g., emotional attachment, sense of belonging) rather than instrumental dimensions of SOC (e.g., influence, fulfillment of personal needs)—is similar

to Zeldin's (2002) argument that research has shown that the former is highly predictive of the later. Cronbach's alpha for SoC was .723.

The effectiveness of instructors' online facilitation was measured through five items. The survey items focus on measuring the perceived immediacy and quality of instructor feedback and the effectiveness of facilitation strategies to facilitate a meaningful learning experience. Cronbach's alpha for teaching facilitation was .802

Social presence instrument was modified based on Kreijns, Kirschner, Jochems, and Van Buuren (2004); and Towell and Towell (as cited in Kreijns et al., 2004). Towell and Towell's scale used one single five=point Likert scale item (e.g., "I feel a sense of actually being in the same room with others when I am connected to a MOO.") to measure social presence in computer-mediated communication. Kreijins et al. used separate items to measure asynchronous and synchronous communication CSCL environment. We designed two items to measure the social presence in terms of the degree of the presence of socio-emotional cues in the communication and interaction process in online courses (Appendix I). Cronbach's alpha for technology scale was .69.

The perceived technology effectiveness (Appendix I) was measured through five items. Among those items, the effectiveness of using technology to support learning, the ease of use of technology, and the availability of technical support were measured. Cronbach's alpha for technology scale was .671.

Finally, the survey used three items respectively to measure the perceived satisfaction ("Overall, I am satisfied with the quality of KD courses."), perceived learning outcome ("I feel that I have learned a lot from KD courses."), and perceived learning engagement ("In general, I think I am deeply engaged in learning in my online courses.").

Data Collection

The questionnaire was given to second-year MBA students in this program. One hundred and six students filled out the survey during the week when students came to have a one-week on-campus program. The return rate for the survey is 100%. Eighteen percent of participants were females, 47% of the participants are in their twenties, and 10.8% are above forty. The majority of the participants (79.4%) have taken 7 to 10 courses in the program. Ten percent of the participants took fewer than seven courses.

Analysis Method

Several statistical procedures were conduct for data analysis. First, the zero-order correlations were computed among all variables. The aim of this operation is to have an initial test of whether there were relationships among the variables. Secondly, we conducted standard multiple-regression procedures with SoC as the dependant variable, whereas gender, age, courses taken, social presence, teaching, and technology were treated as independent variables. The interaction of technology with teaching or social presence was considered if including those items would increase the power of the regression model substantially. Thirdly, three standard multiple-regression procedures were conducted with course satisfaction, perceived learning outcome, and learning engagement as dependent variables, and SoC as one of the independent variables. All assumptions of normality, linearity, and homoscedasticity of residuals were checked in those regression analyses.

Findings

Table 1 displays the means and standard deviations of six variables.

Table 1.

Descriptive statistics

	Mean	Std. Deviation
SoC	3.9782	.45182
Social presence	3.2190	.71214
Teaching facilitation	3.8686	.59669
Technology	4.0131	.55485
Course satisfaction	4.2745	.71969
Perceived learning outcome	4.3333	.76214
Perceived learning engagement	4.1667	.77182

Correlation analyses were conducted between SoC with other study variables. Positive correlations (Table 2) were found between SoC with all the study variables except social presence. This result indicates high correlations between SoC and teaching facilitation and course satisfaction.

Table 2.

Correlations among the study variables

		1	2	3	4	5	6
1	SoC	1					
2	Social Presence	.305(**)	1				
3	Teaching facilitation	.693(**)	.428(**)	1			
4	Technology effectiveness	.436(**)	.290(**)	.525(**)	1		
5	Course satisfaction	.626(**)	.185	.636(**)	.421(**)	1	
6	Perceived learning	.553(**)	.211(*)	.588(**)	.310(**)	.734(**)	1
7	Engagement	.519(**)	.097	.477(**)	.326(**)	.648(**)	.561(**)

** p<.01, * p<.05

Standard multiple regression analyses were applied to examine the relationship between the SoC and independent variables (demographic variables, instructor facilitation, social presence, and technology). The demographic data included gender, age, and courses taken. No violations were found in the assumptions of normality, linearity, and homoscedasticity of residuals.

Table 3 shows the results of this regression analysis. The results of the regression model were found to be significant: $F(8, 92) = 16.899$, $p < .001$. The multiple correlation coefficient is .771 with adjusted R^2 as .595, indicating that 59.5% of total variance of the learning community could be accounted for by independent variables. The regression coefficients demonstrate a significant relationship between SoC and courses taken, teaching facilitation, social presence, and technology. The partial correlations suggest that teaching facilitation accounted for 6.3% of unique variance in SoC whereas the contribution of social presence (2.5%) or technology effectiveness (1.9%) was relatively smaller.

Table 3

Standardized regression coefficients for regression results and partial correlations

	SoC		
	β	**r**	**r²**
Gender	-.008	-.008	0.000
Age	-.102	-.099	0.010
Courses taken	.157*	.155	0.024
Social presence	-.215*	-.157	0.025
Teaching	1.484**	.251	0.063
Technology	.829*	.137	0.019
Teaching X Technology	-1.635*	-.159	0.025
Social presence X Technology	.462**	.239	0.057
$R=.771$, $R^2 = .595$, Adjusted $R^2 =.560$			

** p<.01, * p<.05

As evidenced by Table 3, there is a significant interaction effect of technology with both teaching and social presence. This effect indicates that technology moderates the relationship between teaching facilitation and SoC as well as the relationship between social presence and SoC. A follow-up plotting of the interaction between teaching and technology found that teaching facilitation will show a stronger effect on SoC when the reported technology integration level is lower (Figure 1). The plotting of the interaction effect between social presence and technology suggests that the SoC will benefit more from social presence when the technology integration level is higher (Figure2).

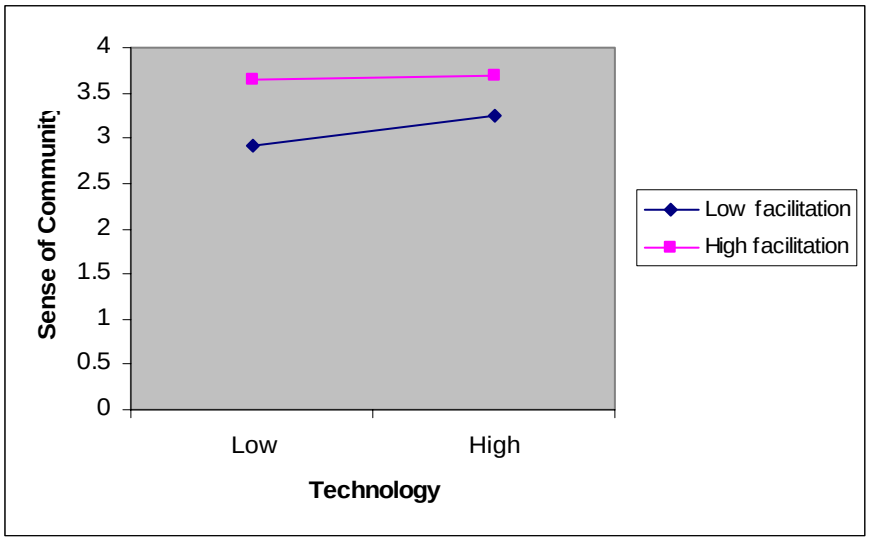

Figure 1. The interaction effect of technology in the association between teaching facilitation and sense of community

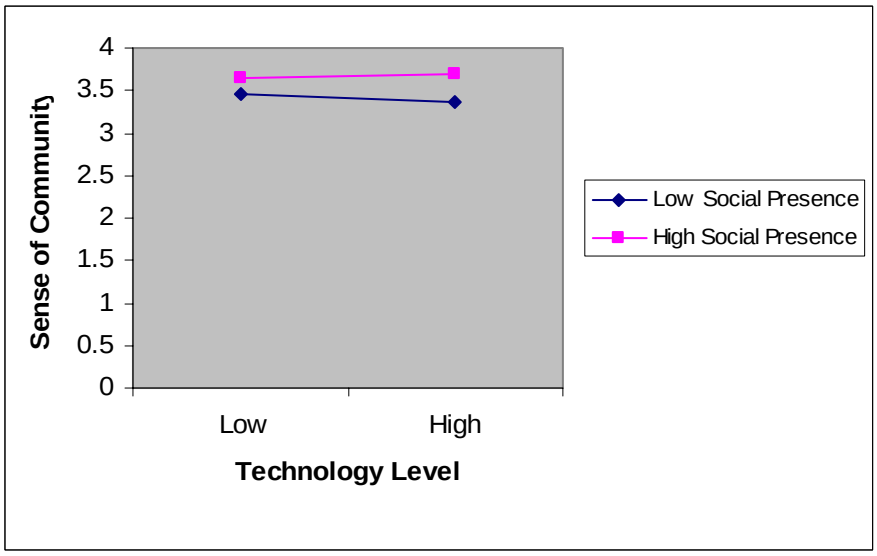

Figure 2. The interaction effect of technology in the association between social presence and sense of community

Table 4 shows the results of a regression analysis with course satisfaction as the independent variable. The regression model were found to be significant, $F(9, 91) = 12.113$, $p < .001$. The adjusted R^2 ($R = .738$) indicates that 50% of total variance of course satisfaction could be accounted for by the regression model. The regression coefficients demonstrate a significant relationship between course satisfaction, courses taken, teaching facilitation, technology, and SoC. The partial correlations indicate that teaching facilitation and SoC have greater unique contributions in predicting course satisfaction than other significant variables. The results also show the significant interaction effect of technology with teaching. This effect indicates that technology moderates the relationship between teaching facilitation and course satisfaction. A

follow-up plotting of this interaction found that the course satisfaction would benefit more from teaching facilitation when the reported technology integration level is lower.

Table 4

Standardized regression coefficients for regression results and partial correlations

	Course Satisfaction		
	B	**r**	**r²**
Gender	.111	.107	0.011
Age	.121	.116	0.013
Courses taken	.120*	.115	0.013
Social presence	-.062	-.044	0.002
Teaching facilitation	1.291*	.203	0.041
Technology	1.041*	.169	0.029
Teaching X Technology	-1.552*	-.147	0.022
Social presence X Technology	-.094	-.046	0.002
SoC	.322*	.205	0.042
R=.738, R^2 = .545, Adjusted R^2 =.500			

** p<.01, * p<.05

Table 5

Standardized regression coefficients for regression results and partial correlations

	Perceived learning		
	B	**r**	
Gender	-.036	-.036	0.001
Age	.144	.139	0.019
Courses taken	.079	.077	0.006
Social presence	-.028	-.025	0.001
Teaching facilitation	.383**	.241	0.058
Technology	-.022	-.018	0.000
SoC	.297*	.207	0.043
R=.649, R^2 = .422, Adjusted R^2 =.378			

** p<.01, * p<.05

Table 5 shows the results of the regression analysis with perceived learning as the independent variable. The results of the regression model were also significant ($F(7, 93) = 9.681$, $p < .001$).

The multiple correlation coefficient (R = .649) and adjusted R^2, indicate that 37.8% of the total variance of course satisfaction could be accounted for by independent variables. The regression coefficients demonstrate perceived learning outcome has significant relationship with teaching facilitation and SoC. The interaction of variables was not included in the regression because the test of including those variables in the equations resulted lower multiple correlation coefficient.

Table 6 shows the results of the regression analysis with learning engagement as the independent variable. The results of the regression model were found to be significant, $F(9, 91) = 7.402$, $p < .001$. The adjusted R^2 indicates that 33.6% of the total variance of course satisfaction can be explained by independent variables. The regression coefficients show a significant relationship between learning engagement and SoC. Age, teaching facilitation, and technology all show an appreciable amount of unique contribution to learning engagement. The regression results also show the significant interaction effect of technology with teaching, indicating that technology moderates the relationship between teaching facilitation and learning engagement.

Table 6

Standardized regression coefficients for regression results and partial correlations

	Learning engagement		
	B	**R**	**r^2**
Gender	-.043	-.041	0.002
Age	.220*	.211	0.045
Courses taken	.077	.074	0.005
Social presence	-.174	-.123	0.015
Teaching	1.451*	.228	0.052
Technology	1.266*	.205	0.042
SoC	.279*	.178	0.032
Teaching X Technology	-2.211*	-.209	0.044
Social presence X Technology	.191	.092	0.008
R=.650, R^2 = .423, Adjusted R^2 =.366			

** p<.01, * p<.05

Discussion

The goals of the present study were twofold. The primary goal was to examine whether three factors of online courses—instructor facilitation, social presence, and effective technology use—had significant relationships with SoC. The second objective was to examine whether SoC can predict students' satisfaction, learning engagement, and perceived learning.

This study concludes that all three variables (social presence, instructor facilitation, and technology) have significant contributions to SoC in online courses—among which, teaching facilitation has the strongest contribution according to the partial correlation coefficients. This

result is consistent with the results of a number of studies that suggest that frequent interaction with students through giving prompts and informative feedback and using a variety of learning activities to foster an in-depth understanding of concepts may be important to establish SoC in online courses (Shea, Li, Swan, & Pickett 2002; Rovai, 2001). This result can be further supported through transactional distance theory. While the dialogue between students and instructor is increased through the online instructor's active facilitation in the ways of providing timely and regular feedback and engaging students in active learning experiences through a variety of learning activities, students will feel less distance from online instructors and students, and more connected within a learning community (Moore, 1980).

The significant moderation effect of technology for teaching facilitation and social presence on SoC is worth noting. This finding suggests that SoC will benefit more from incremental teaching facilitation when perceived technology integration level is lower. This result implies that when the level of technology use in online courses was constrained by available resources, to fully explore the potential of pedagogical facilitation strategies will be especially beneficial for creating SoC. For example, the asynchronous text-based discussion forum has moderate interactivity in terms of its technology attribute. However, through carefully designed facilitation strategies, such as role assignments, SOC may be significantly enhanced.

Although there is significant main effect of social presence on SoC, the partial correlations indicate that the effect size of social presence is relatively low as compared with the effect of teaching or technology, accounting for only 1.5% of the unique contribution of the total variance whereas teaching or technology both make about 4% or 5% of unique contribution to total variance. The notable interaction effect (accounting for 5.7 % of total variance) between social presence and technology suggests that the SoC will benefit more from social presence when the technology integration level is higher. This finding implies that when highly interactive technology is used in online courses, utilizing the sociability of technology to heighten the level of social presence in online courses may be beneficial for establishing a community of learners. Interestingly, the social presence did not present any significant effect on course satisfaction, perceived learning, and learning engagement. This suggests that social presence may not be directly related to learning engagement or learning outcomes, but may indirectly affect learning outcomes through enhanced SoC or other variables.

For the second purpose, the results show that SoC had significant relationships with students' satisfaction, learning engagement, and perceived cognitive learning. In each case, SoC makes about a 3% to 4% unique contribution to the total variaance based on partial correlation coefficients. The students who had higher SoC were more satisfied with online courses. They also have proven to be more engaged in learning and feeling, having learned more when they felt a sense of belonging to online courses. The results of this study added to the evidence that SoC is related to a meaningful learning experience (Rovai, 2002; Chao, 1999).

This study also revealed a significant relationship between the amount of courses taken and SoC. When students had taken more courses, they had a more positive feeling of belonging to a learning community. This result provided evidence to support Brown's (2001) assertion that the relationship among students may be amplified through taking multiple courses and thus SoC will be enhanced.

Another interesting finding regarding the demographic factors is the positive relationship between age and learning engagement. The older students tended to have higher learning engagement. This may be due to the reason that older students also had increased social and professional experiences. They may be willing to share and converse with online learning environments than younger students, and consequently this may foster a deeper learning engagement and SoC.

Limitations and Future Research

This study has several limitations. First, the participants of this study were limited to one online MBA program. Generalizations of the findings from this study to other online programs or disciplines may be limited. Future studies are warranted to extend the study to a larger scale and to online students in different disciplines and examine whether the results would be different across disciplines. Secondly, this study only examined the relationships between SoC with other factors. It cannot explain the causal relationship from this study. Controlled experiment studies that examine the effect of SoC would strengthen the findings of the present study. Thirdly, the literature suggests developmental stages of SoC. A longitude study could be conducted to determine whether SoC is associated with change in time and whether three predictors—teaching facilitation, social presence, and technology use—remain stable over a period of time.

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Appendix I

Survey instrument

Survey items	Average rating	Standard deviation
SoC		
I feel I am part of a learning community when I take KD courses.	4.0784	.74043
I get to know other students in my online courses quite well.	3.2353	.85800
I never felt lonely or isolated when I took KD courses.	3.4412	1.06774
I feel comfortable reading messages or materials online and discussing with others online.	4.1961	.77126
I know I can get help when needed in my KD courses.	4.1765	.63576
I have thought about dropping out of my KD courses due to my disappointment with the course design.	1.6569	1.02923
Teaching facilitation		
KD instructors make announcements and give feedback to students on a regular basis.	3.9314	.74806
Online activities (e.g., discussion, role playing, simulations, etc.) in KD courses foster my understanding of key concepts.	4.1471	.68067
I think the way KD instructors facilitate the class (e.g., social support, SoC, team skills, etc.) fosters my learning.	3.7941	.66509
I think KD instructors help students improve their online learning skills.	3.5686	.80235
I have received prompt feedback on my performance in KD courses.	3.8039	.97533
I have received informative feedback on my performance in KD courses.	3.6667	.93696
KD instructors use various instructional techniques for student's critical and reflective thinking.	3.8627	.74514
Social presence		
I can see the progress of other students' learning made and their outputs in my KD courses.	3.2353	.92465
I can feel the emotions of other students in my KD courses through online interactions.	3.5294	.98208
Technology effectiveness		
Technologies are used effectively in supporting learning and teaching in KD courses.	3.8333	.91287
The tools/technologies used in KD courses (e.g., PowerPoint, audio, video, multimedia, etc.) are helpful in fostering deep learning.	4.0686	.66392
The tools/technologies used in KD courses are easy to use.	4.0980	.57178
I am satisfied with the technical support that I receive in the KD MBA program.	4.1373	.66062
Course satisfaction		
Overall, I am satisfied with the quality of KD courses.	4.2745	.71969
I feel that I have learned a lot from KD courses.	4.3333	.76214
In general, I think I am deeply engaged in learning in my KD courses.	4.1667	.77182

Editor's Note: Use of concept maps is explored as a means of focusing student activity to promote effective learning. It also assists in transition from a teacher control to a learner managed environment. The value of this technique is supported by an extensive body of research.

Concept Map Provision for E-learning

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Abstract

The transition of instructions from traditional teacher-directed learning to online learner-directed learning is anything but smooth. In traditional classroom learning, students are almost entirely guided and have for ages, depend mostly on teachers for their motivations, directions, goals, progress monitoring and corrections. In contrast, for the e-learners to enjoy the same, if not better, learning benefits that online learning brings, they have to assume greater responsibilities over their own learning. Gone are the teachers' assuring presence, inspiration, guidance and encouragement. As learning becomes more and more a self-directed experience, the community of learners and educators is looking for tools that support self-driven knowledge acquisition and provide sufficient learning aids to mitigate such losses.

Keywords*:* E-learning, Personalized learning, Concept Maps, Research, Knowledge Model, Self-directed learning, Lifelong learning

Introduction

In education, we need deliberate learning and deliberate teaching and an educational transaction occurs when the learners and the teaching programs are brought together. When the learning environmental context is face-to-face, with the medium of communication being 'unprocessed' (without technological aids) human voice, constrains by time and space boundaries, we have the traditional education environment. When the medium of communication is replaced by electronic means and conducted without time and space constraints, we have distance learning. While the student/teacher characteristics, subject content or communication variables in theory does not affect the fundamental theory of learning, the mode of educational transaction does require some implicit requirements from the learners.

The E-education Requirements

The e-education transaction, characterized by the absence of a teacher mentor, has imposed some responsibilities on the part of the students. In order for an e-learner to succeed, he is assumed to possess some form of self-discipline, ability to work alone, good time management, learning independence, readiness, the ability to plan for himself and the ability to assess his strengths and weaknesses (Watkins, 2005; Dunlap & Grabinger, 2003). However, many learners see such learning responsibilities as undue burdens. But we truly believe that such underlying philosophy of self-advocacy, self-determination or self-directed learning ability is consistent with what we know to be essential for our prevailing education philosophy. While this view is also upheld by many educators, it is not realized. In schools, many teachers still fail to assist students in becoming self-directed in learning. As a result it is very common, as Knowles (1970), way back in the 1970s, has pointed out, to leave school adult in other ways, but still dependent, or at least retarded in independence, as a learner. Unfortunately, as we step into the 21st century, the situation has not improved. While research has shown that an increasing number of educational institutions are finding ways to support self-directed study through open-learning programs,

individualized study options, non-traditional course offerings, distance learning, and other innovative programs (Hiemstra, 1998), learners still experience a lack of the important learning factors of motivation and persistence (Súilleabhain & Coughlan, 2004) and have expressed feelings of isolation, lack of self-direction and increased management problems (Bennett et al., 1999; Abrami & Bures, 1996; Harasim et al., 1995) when they are called upon to take control over their learning.

The introduction of e-education and the student-centered approach to learning has also presented both educators and learners with a number of concerns. In the traditional education approach, the students' learning activities, curriculum and learning routes are largely static, constrain and prescribe by the teachers. Little, if any, opportunities exist for the students to plan their own educational goals or to consider their own learning priorities, needs and preferences. Often, in a traditional setting, the students are spoon-fed and the exact topics to be learned are made explicit. However, for e-education, such guidance is reduced. Instead, the students are encouraged to construct their own learning paths, consider their own needs and learning goals and to rely less on the teacher for direction. This type of transition from a teacher-centered approach to a learner-centered approach is applauded by many and has even been viewed as the future vision for e-learning (Gay & Teo, 2006). However, while this type of transition is essential, the evolution is too abrupt. The sudden influx of freedom coupled with a lack of guidance and support has made the students feel daunted. As Hammond and Collins (1991) points out, "learners accustomed to teacher directed learning may have no experience of self-management of learning so it may initially be intimidating." Furthermore, the skills (the ability to plan, the ability to manage learning, the ability to review and reflect on reasoning and research skills, etc.) associated with self-centered learning have placed too much cognitive demands on the students. Another issue, given such freedom, is the lack of awareness of the amount of knowledge or even the specific syllabus to follow.

Problems with regard to stimulating and sustaining learner motivation are also well documented in the literature of e-learning and the broader context of distance learning (Visser, 1998; Rowntree, 1992; Zvacek, 1991), especially when learners are working independently at a distance. Learner's motivation is important for the learning process as it has been shown that students will only restructure or assimilate new data only if accommodation fails and when he or she is motivated to reconcile anomalies and to reduce inconsistencies (Wankat & Oreovicz, 1993). However, overcoming these motivational challenges can be difficult because of the complexity of human motivation and the vast number of motivational concepts and theories that exist (Keller & Suzuki, 2004). While the challenge of motivation and drop-out rates are typically answered through the provision of traditional face-to-face communications (Súilleabhain & Coughlan, 2004), the luxury of such provision is not available, or at least minimized, in the context of e-learning.

We believe that such frustrations that most e-learners experienced stemmed from the lack of self-direction.

Self-directed Learning

Most learners spend considerable amount of time acquiring information and learning new skills. The rapidity of change, the continuous creation of new knowledge, increased realization of knowledge as the core competence (Prahlad & Hamel, 1990) and an ever-widening access to information make such acquisitions necessary. Much of this learning takes place at the learner's initiative, even if available through formal settings. A common notion given to such activity is self-directed learning. In essence, according to Abdullah (2001), self-directed learners are "responsible owners and managers of their own learning process". Such individuals have the skills to access and process the information they need for a specific purpose. Self-directed

learning integrates self-management (management of the context, including social setting, resources, and actions) with self-monitoring (the process whereby learners monitor, evaluate, and regulate their cognitive learning strategies) (Garrison, 1997; Bolhuis, 1996).

Self-directed learning is often associated with the skill of self-reflection. McNamara (1999) advocates that a highly motivated, self-directed learner with skills in self-reflection can approach any situation and treat it as a continual classroom from which knowledge can be acquired. While most forms of self-directed learning are informal, self-directed learning can become a powerful form of learning when it is performed in a systematic way of planning (what areas of knowledge and skills we need to gain in order to get something done), implementing (how we will gain the areas of knowledge and skills) and evaluating (how we will know that we've gained the areas of knowledge and skills) (McNamara, 1999).

Self-directed learning also incorporates the significant role of motivation and volition in initiating and maintaining learners' efforts. Motivation drives the decision to participate, and volition sustains the will to see a task through to the end so that goals are achieved (Corno, 1992; Garrison, 1997). It is similar to scaffolding (Teo and Gay, 2006) in the sense that control also gradually shifts from teachers to learners. Learners exercise a great deal of independence in setting learning goals and deciding what is worthwhile learning as well as how to approach the learning task within a given framework (Morrow et al., 1993). Domain-specific knowledge as well as the ability to transfer conceptual knowledge to new situations can also be learned as self-directed learning seeks to bridge the gap between school knowledge and real-world problems by considering how people learn in real life (Bolhuis, 1996; Temple & Rodero, 1995).

Literature on self-directed learning further asserts that self-directed learners demonstrate a greater awareness of their responsibility in making learning meaningful and monitoring themselves (Garrison, 1997). They are curious and willing to try new things (Hunt & Lyman, 1997), view problems as challenges, desire change, and enjoy learning (Taylor, 1995). Taylor (1995) also found self-directed learners to be motivated and persistent, independent, self-disciplined, self-confident and goal-oriented. Furthermore, Morrow, et al. (1993) observes that with proper planning and implementation, self-directed learning can encourage students to develop their own rules and leadership patterns.

Self-directed Learning for e-learning?

It is imperative to observe that it is not a coincidence that all the frustrations experienced by e-learners can be seemingly resolved by the adoption of self-directed learning. As pointed out in the previous section, we reiterate our belief that the e-education transaction has indeed imposed some responsibilities on the part of the e-learner and the trait of a self-directed learner is strongly anchored at the heart of the imposed responsibilities. However, while we aim to nurture all e-learners (or in a wider context, all students) to be self-directed learners, it is the trait or disposition that we want e-learners to develop, rather than a laundry list of observable behaviors we wish students to exhibit.

With a clear need to nurture self-directedness, the next question to ask is: Can self-directedness be taught? If possible, how can we teach self-directedness without imposing addition burdens on the learners? Is there any proven teaching or pedagogical means that we can adopt?

It is in this vein that this research sets out to investigate an effective mean to exploit our current advancement in technology to assist in the provision of self-directed learning. We state in our previous work (Teo & Gay, 2006; Teo et al., 2006), a scaffolding framework that can exist as one effective mean in the provision of self-directed learning. Here in this paper, we extend our earlier arguments (Teo & Gay, 2004) to investigate a concept mapping delivery methodology that can coexist with our scaffolding framework to provide a more comprehensive learning system.

Literature Review on Contemporary Concept Mapping Techniques

An examination of what concept maps are will lead to a broader discussion of the cognitive processes involved in their construction, maintenance and synthesis. However, as there are considerable literature on concept mapping (see, for example, Bogden, 1997; De Bono, 1993; Deikhoff, 1982; Gold, 1984; Kommers, 1992; Kozama, 1987; Novak, 1998; Reader & Hammond, 1993), this paper does not attempt to make an exhaustive analysis of all the aspects of the concept mapping techniques. Not only that, this paper does not even look at the learning benefits that are associated with the adoption of concept mapping (once again has been widely documented). Instead, this paper relies on picking out the factors of concept map which appeared to be essential because they cut across varied points of view that constitutes the conditions for providing quality self-directed learning. Hence, stemming from the basic concepts of concept map, the discussion will begin from the point of view of e-learning. Based on the unique characteristic of e-learning technology (i.e. the distributed nature of the distance learning modality, the physical separation of learners from instructor, the asynchronous communication paradigm, etc.), evidences supporting how the application of concept mapping techniques can complement the nature of instruction specifically designed for that modality will be presented.

Basic concepts

Concept mapping is a technique for representing knowledge in graph and was developed by J. D. Novak of Cornell University in the early 1980's. Cognitive theory underlying concept mapping in science grow out of two related traditions, namely Ausubel's hierarchical memory theory (Ausubel, 1968) that posited a hierarchical knowledge structure and Deese's associationist memory theory (Jonassen et al., 1993) that posited a network knowledge structure that did not take the form of a hierarchy (Ruiz-Primo & Shavelson, 1996).

Ausubel's hierarchical memory theory or hierarchical concept map provides a basis whereby Novak and his colleagues worked from and coined the term "concept map". Concept maps are intended to 'tap into a learner's cognitive structure and to externalize it'. It is recognized that not all concepts or proposition can be represented. Thus, such maps only provide a 'workable representation'. Deese's associationist memory theory or network concept maps on the other hand provide a beginning for characterizing cognitive structure as a set of concepts and their interrelations. Concepts are represented as nodes in a network linked by the associative overlap of two concepts. This theory acts as the basis for an indirect approach to elicit representations of cognitive structure such as word associations, similarity judgments, and tree building. Such methods produce networks with unlabeled lines. This network characterization led naturally to the current view of propositional knowledge known as the "semantic network" with concept nodes linked directionally by labeled arrows to produce propositions.

While both theories started off based on different perspectives, both played a key part that led to the development of concept map from which student's knowledge structures are inferred. Concept Maps are graphical representations of knowledge comprised of concepts and relationships between them. Graphically, it consists of nodes and labeled lines which purport to represent some important aspect of a learner's propositional knowledge in a subject domain. The node corresponds to important terms or concepts in the domain while the lines are connecting links that indicate the relationships between two concepts. A proposition is a meaningful statement about some objects or events and is formed by a concept-link-concept triple (a combination of two nodes and a labeled line). A concept is defined generally as a perceived regularity in events or objects, or record of events or objects, designated by a label. Concepts are usually enclosed in circles or boxes, and the relationships between the concepts are indicated by connecting lines that link them together.

Concept Mapping Provision for Self-Directed Learning

Although concept mapping is a very old form of presenting information, we believe its application holds the potential to uphold the contemporary practices in teaching and learning. More importantly, we see concept mapping techniques as one effective means to provide the provision of self-directed learning. Besides self-directed learning, evidences supporting how concept maps can be used to support learner-centered learning and the enhancement of learning experiences such as self-reflection, stimulating and sustaining learner's motivation, learning independence and the ability to plan for themselves are also discussed in this section.

Concept mapping can connect the learner with the content and provide a wider learner engagement with the intent of providing a learner-centered experience (Laight, 2004). Furthermore, it complements and advances self-directed learning. As articulating-, reflective- and problem-based learning focus on self-direction and tends to be mainly unstructured, the use of concept mapping can be used to structure the information/knowledge acquired during these educational approaches (Farrand et al, 2002). Concept maps as a learning strategy thus supports and fosters new trends in higher education since it allows learners to externalize their thinking in a visual/verbal outline which enables them to review, reflect and revise their thinking.

The usage of concept maps also promotes self-reflection through its explicit structural model. It is important to note that learning only takes place through cognitive restructuring whereby the student revises their model of the world. Such self-reflection can only occur when students are able to comprehend and integrate the newly acquired knowledge into their cognitive structure. However, not all new concepts can be easily integrated. Often, the introduction of a new concept creates learning disequilibrium. However, it has been shown that when the new concept is structured together with a plausible and understandable concept map model, the model can aid in eliminating the disequilibrium by explaining and housing the new data (Wankat & Oreovicz, 1993). The reorganization is also aided as the information is presented in a hierarchical form with explicitly stated rules for generating hierarchies (Kurfiss, 1988). Learning new material in a form which is easy to recall from memory is aided if students are given objectives which help them key in on important material and if the material is presented in a well-organized fashion (Kiewra, 1987).

The important learning factors of motivation and persistence can also be catered for by concept mapping. Reports examining student attitudes to concept maps have indicated important non-cognitive influences such as academic workload, motivation and contextual institutional issues (Farrand et al., 2002; Santhanam et al., 1998). Learning style is another important student diagnostic target that has prognostic implications for student engagement and motivation to learn (Martinez-Pons, 2001). With regard to Keller's attention-relevance-confidence-satisfaction (ARCS) model of motivation, accommodating various learning styles using a variety of teaching/learning activities can be expected to ensure relevance to the individual learner by facilitating ownership of and thereby engagement with learning content (Keller, 1987). We will show in the later section how concept maps can be used to cater for different learning style and hence, aid in stimulating the learner's motivation.

Other important traits of confidence and independence can also be nurtured through the usage of concept maps. Harpaz, Balik and Ehrenfeld (2004), assessed student responses through the use of concept maps and found out that concept maps encourage students to think independently, increase their orientation in knowledge, aid in finding connections between the different areas, and give them more confidence in implementing their knowledge. Smith (1992) evaluated the use of concept mapping in an immunology nursing course and reported that concept maps encourage students to learn by themselves and provide the knowledge to implement into the clinical field. A major finding of Daley's study (2002) also states that concept mapping helps adult students to understand their own learning processes and gain independence. Additionally, they were able to

explain their learning processes through the use of learning strategies such as linking, developing interrelationships, creating meaning schemes, and constructing knowledge. It is reported that the maps help them to understand how they think, to think in a broader fashion, to search out complicated relationships, and to organize information so that they remember it in a much more comprehensive way. Daley (2002) also advocates that once the learners are able to explain their own learning, they were much better prepared to function as educational professionals promoting learning and change.

Proposed Concept Mapping Usage for E-learning

In view of our preceding arguments on the importance of cultivating self-directed learning traits for e-learners and the supporting evidences that concept mapping techniques can serve as one effective means for the provision of self-directed learning, we advocate that concept maps can serve as the missing bridge between e-learners and their learning needs. However, due to the nature of e-learning (i.e. minimized teacher-student interaction, geographical separation between teacher and student), it does not seem practical to incorporate concept mapping techniques if it requires frequent student-teacher interaction. Hence, in contrast to most concept mapping software that acts either as a drawing tool for the learners to facilitate knowledge construction or as an assessment means whereby teachers correct the learners' learning assumptions, we work around the concept map limitations by using concept maps as a form of knowledge delivery mechanism. That is, instead of using concept maps as a drawing tool to facilitate the externalization of the students' understanding, we elicit concept maps from the content expert's perspective and use it as a knowledge roadmap to guide the learners. Specifically, to minimize the impediments to e-learning (and to aid learning independence and promote self-directed learning), 5 ways in which concept maps are being employed is presented.

1. Knowledge Roadmap

As stated in the preceding section, one impediment to learning independence and self-directed learning is the inability of the learner to understand what to learn, how much to learn and when to stop. For traditional learning, the amount of relevant curriculum materials to learn is usually finite and knowable. Furthermore, there will always be a teacher who is guiding and monitoring the student's progress. However, when it comes to e-learning, the rate of knowledge expansion is exponential. This couples with the absence of the teacher and the inability of the student to plan for himself is one big hindrance to e-learning. Furthermore, the learning experience of continuity, integration and interaction that is often associated with traditional learning is now being replaced by a fragmented, episodic and discontinuous learning experience that comes with e-learning.

Although the pre-defined curriculum arrangement and teacher's guidance is an effective learning facilitator, it inhibits the opportunities and freedom for the student to exercise planning or goal seeking. It also does not nurture the student's creativity and willingness to explore new learning frontiers. Furthermore, it does not prepare the student for lifelong learning. It is important to note that learning is not a spectator sport, and students must take an active role in their own educational planning. However, as the students have not been exposed to such roles of planning, concept maps can be exploited to serve as explicit knowledge roadmaps of expert to smoothen the abrupt transition. The knowledge roadmap, categorizes in terms of academic domains, elicits the experts' guidance and advices by placing key learning advices such as learning concepts interrelationships, recommended learning sequence, proposed curriculum planning and abstraction level into the learning concept's metadata. For example, using a particular subject that the student is interested in as the main desired knowledge point (hereby called main course for discussion purposes), the expert guidance and advices (stored in the main course's metadata in terms of course relationships) are externalized as a form of course concept map. Through the usage of 5 relationships, a roadmap of the expert can be mapped radically outwards from the main course. This roadmap effectively gives an overview of the domain knowledge that initiates

from the point of view of the subject experts. Hence, it can serve as a guide whereby the learners can extend, plan and formulate their own learning curriculum.

Five course relationships are discussed:

a. Associated learning course

The 'associated' relationship relates courses that reside at the same hierarchical level (i.e. same expertise level, content coverage) as the main course.

b. Essential pre-requisite learning course

The "essential pre-requisite" relationship relates courses that cover the essential learning concepts that must be mastered first before the main course (higher level) can be mastered. Hence, this relationship links the two courses and restricts the lesson plan in a particular sequence; a 'sequence in time' relation. That is, the essential pre-requisite learning course must always be taken first before attempting the main course. Essential pre-requisite learning courses are typically theoretical in nature and cover all fundamental learning theories and concepts such as facts, laws and principles. It is usually delivered at the conception of the learning and form a bulk portion of the learner's initial academic learning phrase. It is characterized typically by knowledge impartation (from content) – cognitive awareness (student) – cognitive reorganization (student).

c. Supplementary pre-requisite learning course

The "supplementary pre-requisite" relationship is similar to the "essential pre-requisite" relationship in the sense that such courses (if taken) should be taken first before the main course. This relationship also has a 'sequence in time' relation. However, as opposed to the essential pre-requisite learning courses, supplementary pre-requisite learning courses are not essential to understand the learning concepts that reside at the main course. Instead, these courses cover some good-to-know learning concepts that supplements and provide additional learning materials or practice that can be taken at the learner's convenience. The supplementary pre-requisite learning course focuses on helping the students to link and interconnect their learning. Opportunities are provided by such events to break away from the compartmentalization of knowledge and skills and to help the students to construct a better network of knowledge and skills. Furthermore, such learning events are an authentic form of learning that prepares the students for the increasing demands of the workplace (Kwok & Tan, 2004).

d. Augment post-requisite learning course

The "augment post-requisite" relationship cover learning concepts that augment the learning concepts taught in the main course; that is, the learning concepts covered in the augment post-requisite learning course must make greater, more numerous, larger, or more intense arguments on the learning concepts that are taught in the main course. Such courses emphasize more on the theoretical aspects of the learning concepts and are inclined towards advancing the theoretical and abstract concepts imparted in the previous education setting. This mode of learning is extremely beneficial in conveying paradigms of thinking and information. The application of knowledge and the development of communication skills are however secondary. Such learning courses are characterized by learning contents that are hierarchically organized and aim to guide the learning process through structured syllabi and tests. The training is usually housed in a certain context but the students are assessed both inside and outside the arena in which they hope to minister.

e. Utilize post-requisite learning course

The “utilize post-requisite” relationship cover learning concepts that utilize the learning concepts taught in the main course. These learning courses look at the practical usage of the knowledge. It focuses more on the application of the knowledge rather than its fundamentals. This mode of training is based on the premise that students learn most effectively through experiences and practice in a deliberately organized program. It uses real life examples as the basis for purposeful training. Such mode of learning is highly relational yet unstructured in the sense that training is focused on the working towards problem solving and the teaching materials are structured outside the normal school curriculum. The student has complete control over his learning and this mode is participatory in nature.

2. Knowledge Snapshot

Most educational systems face challenges that warrant the reform of learning contents. The increasingly complex nature of the objects that make up the educational landscape and the amazing progress technology and the specification of standards for various aspects of educational technology has made is alarming. Knowledge is becoming more and more complex and needs to be continually up-dated. Learning content hence, needs to be revised accordingly to improve its relevance and quality and keep up with the changing pace.

Currently, as the learning contents are revised, the previous link between the learning concepts are removed and replaced by new associations. For example, using a computer course as an illustration, a computer course back in the 1980s will contain links between computers and storage devices such as floppy disk and drive (5.25-inch and 3.5-inch). However, a revisit of such courses now will see the storage device link being replaced by CD-ROM, mircodrive, thumbdrive and other usb-powered devices. Such snapshots of knowledge in time are often lost (except in history courses).

Hence, besides utilizing the dynamic nature of concept maps, we also propose the employment of concept maps as a static knowledge snapshot in time. The usage of a static concept maps (to store previous links and associations) can also help the learner monitors, modifies and plans his self-directed learning curriculum. By reviewing past curriculum planning and the learning acquired, the learner can recap or advance his knowledge.

3. Visualization Mechanism

a. Course structure

The course concept maps have to be visualized in terms of an n-dimensional space – not planar or Cartesian space. The relationships between the courses can be thought of as ‘deep’ as opposed to ‘surface’ linkages. Each course concept map will be centered on one main course. All its related courses and relationships will be mapped radically outwards from the main course. This mapping should be done dynamically at real time; that is, a selection of a different learning concept as the main course will automatically change the structure of the course concept map.

As the entire lecture topic, unit, course or even curriculum can be treated in this format, the holistic relatedness of ideas can readily be illustrated. Furthermore, the use of concept maps in large class teaching represents varied instruction that can be expected to enrich lectures, inspire interest and attention and promote receptivity and cooperation (Biggs, 1999; Buzan & Buzan, 2000).

b. Cognitive Structure Externalization

The term ‘cognitive structure’ stemmed from Piaget’s general theoretical framework "genetic epistemology" that looks into how knowledge is developed in human organisms. The concept of cognitive structure is central to his theory and comprises of four primary

cognitive structures; i.e. sensorimotor, preoperations, concrete operations, and formal operations. Cognitive structures change through the processes of adaptation. Adaptation can be further decomposed into the process of assimilation and accommodation. Assimilation involves the interpretation of events in terms of existing cognitive structure whereas accommodation refers to changing the cognitive structure to make sense of the environment. Hence, cognitive development consists of a regular attempt that aims to adapt to the environmental input changes through the process of assimilation and accommodation. In this sense, Piaget's theory is similar in nature to other constructivist perspectives of learning such as Bruner (1996; 1990; 1986; 1983; 1973; 1966; 1960) and Vygotsky (1978; 1962) which states that learning is an active process in which the learner is constantly creating and revising his or her internal representation of knowledge (Duffy & Jonassen, 1992). Constructivism is a major influence in current science education and an inspiration for its reform (Deboer, 1991; Duschl, 1990; Driver, 1989; Osborne & Wittrock, 1985).

The cognitive structure theory is also in line with an enormous body of research that focuses on science education and the ideas students bring with them into the classroom. As constructivist theory contends, students are not empty vessels. Hence, they come into classroom or any educational setting with a wide range of prior ideas and conceptions. Therefore before any knowledge can be imparted, in a learner-centric learning environment, it is crucial to invite the learners to clarify where they stand, at present, in terms of the new knowledge. This stage, called the cognitive structure externalization, is very important.

Many prior studies have demonstrated the importance of informal and formal prior knowledge (see Dochy, 1992). Essentially, prior knowledge activation sets the stage for learning by sharpening the perception of the learner. It tells the learner not only what s/he has to learn but also what the person perceives s/he already knows. Sometimes this is a rude awakening, sometimes a corroborating experience. The result of such reflection when compared with records of the learner's past expertise can aid in the identification of the appropriate starting point of his learning route. The activation of prior knowledge is being applied as a sort of learning preparation. It is used to connect the new knowledge with the existing ones; to synthesize prior knowledge with the new content. Hence, the main design consideration of this part is to effectively plan the querying methods to accurately retrieve the learner's prior knowledge and investigate how to connect the learner's prior knowledge to the new knowledge.

Once the prior knowledge correlation is achieved, then training can begin. The prior knowledge (stored in the cognitive structure) will be externalized in the form of concept maps. Research has shown that concept maps have been widely accepted as an effective aid to help students externalized their knowledge in a domain effectively (White & Gunstone, 1992) and evolve and support meta-cognitive activities (Novak, 1990).

4. Personalized Learning Routes

Using concept maps to create personalized learning path is the main motivation underlying this research. We argued that in consideration of all the learning benefits that concept mapping brings, the provision of personalized learning routes stand at the heart of the student-centered or self-directed learning approach. The ability to provide personalized learning routes can make or break the e-learning vision. In view of the importance imposed on the term, personalization, it is imperative to classify our stand on creating personalized learning routes.

Personalized learning routes are tailored to the learning needs and interest of each individual student. It honors and recognizes the unique gifts, skills, and prior knowledge of each student. It is dedicated to providing individualized learning programs for each student whose intent is to engage each student in the learning process in the most productive and meaningful way to optimize each student's learning potential.

5. Learning Preferences Catering

Education research confirms beyond any semblance of doubt that not all students are able to learn successfully at the same pace, with the same approach, in the same environment, on the same path, and in the same style and manner. The underlying assumptions of a one-size-fit-all traditional learning model are flawed. Every individual assimilates information according to their own unique learning style, needs, and interests. While some learn at faster pace, others need more time. Learning preferences also vary.

There is a large body of research on learning styles or preferences. Some popular models for describing and eliciting learning styles are presented below.

a. Index of Learning Styles (ILS)

   ILS is an online instrument used to access learning preferences. It is based on a learning style model that consists of four dimensions (active/reflective, sensing/intuitive, visual/verbal, and sequential/global).

b. VAK (Visual, Auditory, Kinesthetic) Model

   The VAK learning Style uses the three main sensory receivers - Vision, Auditory, and Kinesthetic (movement) to determine the dominate learning style.

c. Kolb's Learning Inventory

   Kolb's learning theory sets out four distinct learning styles (or preferences), which are based on a four-stage learning cycle. The four-stage cycle is Concrete Experience - (CE), Reflective Observation - (RO), Abstract Conceptualization - (AC) and Active Experimentation - (AE) while the four-type definition of learning styles consists of Diverging (CE/RO), Assimilating (AC/RO), Converging (AC/AE) and Accommodating (CE/AE).

d. Carl Jung and Myers Briggs Type Indicator (MBTI)

   MBTI uses four dichotomous dimensions namely Extroversion (E) versus Introversion (I), Sensing (S) versus iNtuition (N), Thinking (T) versus Feeling (F) and Judging (J) versus Perceptive (P) to determine a person's learning preference.

Besides making the associative knowledge structure of topic or subject matter explicit, concept maps can also be exploited to support students in making appropriate connections to their learning preferences. Hence, besides acting as a virtual interface, the concept map nodes can also be used to house different learning preferences presentation for a particular learning concept; that is, when the learner selects a particular node in the concept map, the node can automatically presents the course offering presentation that caters to the particular learning preference of the learner.

Conclusion

The biggest challenge for e-learning programs is to continually monitor and reform the teaching approaches to keep up with the changing needs of learners. Through an analysis of current e-learning literature, we believe that the current high attrition and drop out rates continues to be the Achilles heel for e-learning. This, we believe, stemmed from the fact that the very nature of e-

learning requires a high degree of self-motivation, persistence, commitment from the learners. These requirements are creating a serious problem of high attrition and drop out rates as it is not recognized and managed. Currently, too many learners lack the adequate skills and mindset for the rigors of e-learning. Hence, this necessities a revisit (and possible reform) of the current e-learning model to provide a more self-directed learning experience that supports self-driven knowledge acquisition.

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Editor's Note: When the locus of control for learning moves to the student, the roles of teacher and student are redefined. A variety of methods have been identified to facilitate successful transition from teacher control to independent learning. Key to all of these is development of learner autonomy.

Understanding and Promoting Autonomy in UK Online Higher Education.

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Abstract

Through a review of literature this research demonstrates that autonomy can have different interpretations. A considerable body of research describes methods through which autonomy is promoted in a face-to-face environment. A comparable level of research in the online domain is not evident. A description of methods being used by the Ultraversity Project (a fully online degree program) to promote online learner autonomy demonstrates that comparable techniques for the promotion of autonomy can and indeed do exist. The research suggests that the online environment offers additional opportunities for autonomy, and these are charted. A model depicting stages of autonomy experienced by online learners is proposed. Learners are shown to have mobility between stages; this mobility is shown to relate to the methods of autonomy promotion that are applied.

Keywords: Autonomy, personalized learning, online learning, online community.

Introduction

In the emerging arena of online higher education arena there is little understanding of how autonomy can be enabled despite its importance within education. The principle of autonomy within UK Higher Education is widely and thoroughly explored (see for example Channock 2004; Fazey & Fazey, 2001; McNair, 1995, Spencer & Childs, 2005) but a parallel understanding for online higher education is not evident. Unanswered questions in the online context include; What is the nature of autonomy online? What methods are available to encourage autonomous learning in a fully online program? How effective are such methods in promoting autonomy?

The Ultraversity Project

The BA (Honors) Learning, Technology and Research fully online degree was launched in 2003 and is part of the Ultraversity project based at Ultralab, the research, education and technology unit of Anglia Ruskin University, Chelmsford, England. The students are called researchers as the course is centered upon individual professionally based research rather than delivered content. Researchers come from a range of professional contexts (including education, health services, commerce and the self-employed sector). They are often full time workers, who have not had the opportunity of attending a University.

Researchers undertake a degree pathway that is inherently personalized; a generic degree structure with built-in mechanisms for individual learners to adapt the degree to their own context and shape their own research agenda. The BA Learning, Technology and Research is a fully

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online program at the heart of which is an online learning community. The community provides an online arena for peer interaction and dialogue and it gives access to researchers for engagement with learning facilitators. As well as the community, Ultraversity offers researchers a range of supporting tools and resources. As the project is fundamentally research based, tools and resources are constantly evolving.

This fully online degree is coupled with principles of collaborative community learning, prominence is given to individuality and negotiated learning, independent learning planning, peer review, reflective study modules and action research projects.

What is autonomous learning and how is it promoted in Higher Education?

In the UK autonomy in higher education has been associated with freedom, choice, decision making and with the idea that students should take responsibility for learning (Boud, 1988). Autonomous learners can make decisions about their own learning and perceive themselves as being in control, they are intrinsically motivated and have confidence in themselves (Fazey & Fazey, 2001), and they have a capacity for active and independent learning (Dickinson 1995). The promotion of autonomous learning in UK higher education has, since the 1990's, taken place against an increasing socioeconomic culture of individualism (Laycock & Stephenson, 1993) so that autonomy has become a widely expected outcome of higher education.

Autonomy is synonymous with learner responsibility as well as control. Boud (1988) links this increased learner responsibility with the lessening intervention of a teacher whilst Clark (2001) equates this to a growing culture of teaching through a refusal to teach. Others though, including Pennycook (1998) see the responsibility of an autonomous learner as being quite different, as the decision to independently seek assistance or guidance from a teacher. Candy (1988) notes that the novice's need for assistance may actually reflect a higher level of autonomy whereby the learner makes the conscious choice between dependence and independence based upon need. Student responsibility may then be equated with autonomy, but this does not necessarily infer a lessening of teacher intervention.

Developing autonomy may be seen as changing how learners feel about themselves and the environment in which they operate, particularly in developing their sense of control (McNair, 1995).

Fazey and Fazey (2001) emphasize three key psychological factors that predispose learners to be able to develop autonomy, these are perception of competence, perceived internal locus of control and intrinsic motivation. Rather than developing self, Channock (2004) emphasizes the importance of routines that develop meta-cognition, including reflection notes with assignments and reflections on the process of assignments as part of the product. In keeping with this outlook Petric (2002) gives particular value to the process of discussion which celebrates difference (independence) amongst students, explores whether students found activities useful, whether they would adapt activities or use them in future, also exploring what activities made them uncomfortable.

Spencer and Childs (2001) identified and explored factors important to developing autonomy amongst new undergraduates in the first year of a face-to-face degree program. They found that variables in determining autonomy included:

- the place of students self-evaluated performance (though supported by tutor feedback) as it assists students to plan (a form of control).
- peer support was important in paving the way to autonomy because of its contribution to the self evaluation process and because of its motivational capacities.

- students previous experiences of study; expectations were often seen to be of more structured and guided nature amongst those coming in to Higher Education from traditional routes.
- financial and other concerns particularly family were also noted by the authors as potentially influential of the transition in to Higher Education.

Childs (2005, p5) concluded that determinants of autonomy "include previous learning experience, independent study methods, work load, time management and reading skills, tutor attitude and practice feedback, assessment and the peer group". Though these were not supplemented with pragmatic practitioner oriented recommendations, for example although tutor attitude was an important determinant the papers did not go so far as to outline the nature of an autonomy encouraging tutor. Neither are the conditions set out here ubiquitously accepted as learners grow in autonomy; for example with regard to the importance of the peer interactions Kearsley (1995) suggests that the more autonomous a learner is, the more reflective too thus they demand less stimulation and reinforcement from interacting with peers.

Table 1 summarizes the factors that influence autonomy in learners in face-to-face higher education environments divided in to three categories.

Table 1

Factors which according to literature influence autonomy in learners in face-to-face higher education environments

PART 1. CONDITIONS EVIDENT IN TEACHING AND LEARNING	
a.	Community/peer learning & dialogue
b.	Peer review
c.	Reflection on learning
d.	Negotiated learning activities
e.	Self-evaluation
f.	Evaluation of performance (though supported by tutor feedback)
PART 2. EXTERNAL INFLUENCE LEARNERS	
g.	Motivation
h.	Peer support
i.	Peer group (social)
j.	Financial and family concerns
k.	Other concerns and the experience of personal development
l.	A need for [life] change and taking responsibility (attitude)
PART 3. CHARACTERISTICS OF LEARNERS (INTRINSIC)	
m.	Perception of competence
n.	Perceived internal locus of control
o.	Intrinsic motivation

Autonomy, technology and UK online learning

According to the UK's Quality Assurance Agency for Higher Education (2005) one of the consequences of higher education's emphasis on autonomous learners is the emergence of new strategies to promote autonomy, including distance learning and the use of electronic materials. How such strategies are able to promote autonomy is not made explicit. A link is provided without explanation.

In a National Endowment for Science, Technology and the Arts (NESTA) report Green et al. (2005) consider how personalized learning, particularly learner choice and technology may be achieved. Whilst the authors state that in working towards personalized learning, assessment has a key role and should be "a positive and constructive experience, engaging the learner and the system in a process of constant monitoring, updating and dialogue" to promote ownership the of assessment amongst students, they offer no pragmatic illustration of the possibilities of technology in enabling this process.

Methods

To explore autonomy in an online higher education, the BA (Honors) Learning Research Technology provided a case study environment. A case study was undertaken to establish what methods are available to encourage autonomous learning in a fully online higher education program and to simultaneously explore the nature of autonomy online. The methods used were three fold.

The first was observation of the course provision was undertaken, observing the provision of resources, learning activities and the way things were done within a cohort (year group). The observations were reviewed and developed by two other learning facilitator practitioners for completeness and accuracy.

Second, to gain view of the provision from the researchers perspective, an online discussion was instigated with the aim of exploring researchers perspectives of autonomy and to understand their perceptions of what provision contributes to their autonomy levels. The decision to instigate a discussion in the online community was made to allow asynchronous and thoughtful discussion particularly to allow researchers to act without time pressure. It also allowed thoughtful probing. This method of engagement left a written record of exchanges and thus alleviated data recording issues. Seventeen researchers engaged in the discussion; the size of the year group from which the sample (discussion) group came was eighty-one.

Third, an exploratory researcher case study was undertaken to consider effectiveness of the strategies to promote autonomy and illustrate how an individual engages with these factors. A single researcher was interviewed and her online community participation analyzed, any engagement with visible autonomy promoting opportunities (including the Independent Learning Plan tool) were identified and analyzed; moreover asynchronous email discussion was undertaken to harmonize the interpretation of the data with the intended conveyance of meaning by the case study researcher.

What is being done in the fully online BA Learning Technology Research to promote autonomy?

Facilitator observation of the program structure revealed six ways in which autonomy was promoted. These were in line with the factors found in face-to-face higher education settings. Researchers added further factors, not present in literature or seen through facilitator observation. A summary of the factors present in the program can be seen in Table 2

Table 2

Factors that Promote Autonomy in the fully online BA Learning Technology and Research program.

Factors identified by researchers only	Factors identified by observation and researchers[a]
Flexible access	(a) Community peer learning and dialogue
Learning facilitation	(b) Peer review
Self selection	(c) Negotiated learning activities
Lack of face-to-face contact	(d) Self evaluation
Media choices	(e) Evaluation of performance
	(f) Reflection on learning

[a] bracketed letters correspond to Table 1 to show the commonality between literature and reality

Having identified the factors that promote autonomy in the degree's online environment, explanations of how each factor contributes to learner autonomy are hereafter offered.

Community/peer learning & dialogue: Researchers primarily communicate with each other through community messaging (one to many). Initially learning facilitators encourage researchers to join in the community using a range of methods; in the early stages this may involve introduction posts or responses to 'ice breaker' activities. In time the community strengthens and dialogue becomes more developed and the community begins to learn collaboratively, moving towards social learning which is not heavily dependent on one to one support. Researchers are exposed to, and are able to make choices about, their learning within the flow of community dialogue.

Peer review: In the community environment researchers are actively encouraged to share research and research products with the purpose of mutually acting as critical friends and motivators. The researchers gain confidence and a degree of independence through peer review but emphasized the importance of guidance in making this process effective. Guidance on how to give peer review helped researchers to give effective feedback to other researchers. The peer review process was empowering for researchers enabling allowing them to make decisions in what to feedback to others and about how to respond or act based on feedback. The asynchronous community environment review can be performed at a level depth not always possible in a synchronous situation.

Reflection on learning: Within modules and notably also in assessment there is an emphasis on reflecting upon what has been learned as well as stating what has been learned. The theme of reflection in modules was cited by researchers as a way in which they may develop skills for autonomy, as they are able to examine their learning and see their progress, and so gain confidence and a sense of control. The asynchronous community assists reflection as it keeps a log of the messages, visible cues about the progression of a learning journey not possible in other environments; there is a textual record of activity and dialogue upon which thoughtful reflection can occur.

Negotiated learning activities: The assessment criteria used within the first year (and beyond) reinforces the desirability of negotiation. To achieve an 'excellent' in the realm of task completion researchers must demonstrate the active negotiation of activities. The negotiation of

tasks is supported by online workshops in how to personalize tasks (basic negotiation) and how to renegotiate tasks.

The actual canvas for negotiation varies by module but technology is always involved. One method for negotiation is the electronic Independent Learning Plan (ILP). The ILP templates are generic editable documents which outline ways in which the learning outcomes of a module may be achieved. They are housed in a secure web site, each researchers' ILP is viewable to themselves and their learning facilitator. The researcher accesses the ILP to carry out changes and then the same document is visited by their Learning facilitator who is able to make comments about the changes and either approve them or suggest further changes. The asynchronous nature of the tool facilitates this process. Changes can be incremental and considered.

Amongst researchers there was a consensus that personalization is desirable with clear guidance. The need for guidance was captured articulately in the researchers online discussion; "the ILP … is a journey planner using existing networks. - Perhaps I am more comfortable being 'guided' rather than exploring - at the moment anyway". Guidance for the negotiation of learning was seen to come from learning facilitators and peers in the community and also from module resources.

Though negotiation is a key factor in permitting and promoting autonomy it is inherently limited because of the context in which it was being sought; though the program has mechanisms for promoting high levels of autonomy the degree of achievable autonomy was ultimately constrained by those parameters which ultimately define formal qualifications.

Self-evaluation: The use of assessment which gives credit for a researchers skill in evaluating their strengths and weaknesses is a permanent feature in the first year of study across all modules. Like negotiation, it is rewarded in assessment. Through guidance in module learning activities, researchers are continually encouraged to assess their strengths and weaknesses. Such evaluations and identifications then support research topics in subsequent modules. The need for strength and weakness assessment is both for assessment and for research development.

In addition a skills assessment skills assessment module is presented to the researchers: This module demands researchers reflect upon their academic year, specifically they identify their current level of performance and make plans to improve areas of concern. The assessment for this module is not a reinforcement of the decisions made in the process but is based upon the quality of the evidence, discussion and the ability of the researchers to identify strengths and weaknesses. In identifying these areas and engaging in subsequent planning researchers are empowered to take control of their learning, the scaffolding that the module framework allows researchers to choose pathways for development.

Evaluation of performance (though supported by tutor feedback): The use of coversheets (here a document for summative feedback after assessment), learning facilitator formative feedback, and self and peer evaluation all contribute towards this condition for autonomy. This combinational approach to evaluating researcher performance may promote planning and researcher control.

Flexible access: The factor most frequently cited as being a provision for enabling autonomy was simply the provision for researchers to learn whenever and wherever they choose. The ability to communicate with peers in an asynchronous community and to study at a time that suits the situation of individuals, offers a high level of choice for researchers. For some researchers, this flexibility of access and ability to choose comes with high levels of self-sacrifice to participate. They make room for the program by working less hours or squeezing into busy schedules of existing commitments at home and with work. This requires high levels of commitment, personal organization, and time management.

No face-to-face: The researchers in discussion cited a push towards autonomy from lack of face-to-face contact in the course. Not seeing other researchers encourages independence. It also gives impetus to converse, share work, give peer reviews and accept advice and constructive criticism from others.

Support from Learning Facilitators (guidance): It has been discussed hitherto that researchers require guidance from learning facilitators to prevent isolation, assist in negotiation of tasks and offer feedback. The facilitator's role is one of scaffolding autonomy. Community facilitation limits the sense of isolation as it gives access to advice from a range of 'guides'. The nature of this guidance is often initially in the form of reassurance and also prompts for the development of ideas as well as the provision of praise and critique. The technology allows access to multiple sources of advice at any time. Accessing a team of facilitators online rather than an individual facilitator only, was also seen as a way of exposing researchers to a range of inputs which help in making informed choices in the learning journey. The subtle differences in guidance between the facilitation team offers exposure to a range of ideas, being exposed to a range of views in guidance has the knock-on effect of creating the need for choice and decisions.

Media choices: The BA Learning Research Technology actively encourages researchers to use a range of media and genre, often experimentally in their assessment production. Encouragement comes by way of reward for the appropriate use of media in assessment, through modeling in the presentation of media rich and experimental resources, seeding with suggestions for media possibilities in task outlines and also through community discussion. The course in media terms is a blank canvas and researchers can make all of their own media choices. The highly skilled facilitation team, which has expert technical backing are able to receive and assess a plethora of media and genre. One researcher in discussion outlined the significance of the guidance mechanisms for media choice empowerment; "Being presented with brief lists of media and genre types earlier in the year gave me ideas about how I might present work and thoughts. I am now, as a result of this, having more ideas for the future … because of the wonderful feeling of freedom in self-expression that I felt when working creatively".

The negotiation of modules identified earlier overlaps with this theme as the negotiation of media experimentation is explicitly addressed. Figure 1 below shows an extract from an Independent Learning Plan template as it is presented to the researcher, it refers to an activity which encourages the researcher to use technology in their learning journal to understand better their work role. Figure 2 is an example of how a researcher edited the same activity, changing the technology utilized to explore the individual's job role.

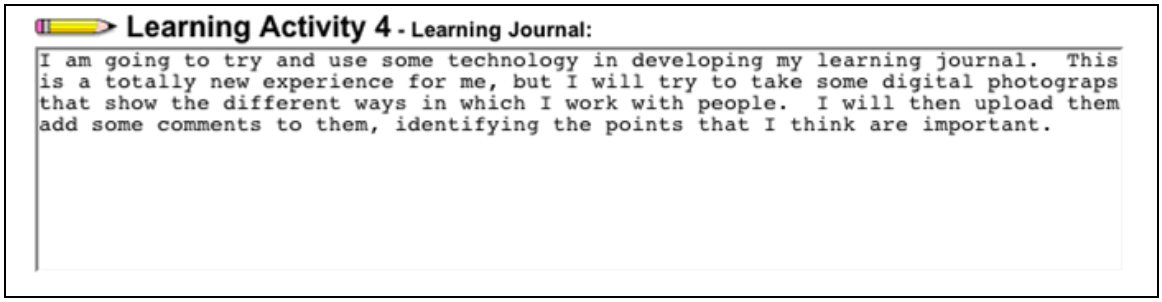

Figure 1. An Individual Learning Plan Extract

Learning Activity 4 - Using my Learning Journal
I am going to try and use some new technology in developing my learning journal. I want to challenge myself so I will try to create a digital video and take some digital photographs that show the different ways in which I work with people - a 'Day in the life'. I will then create a website to showcase my work.

Upload this section of my Learning Journal into the 'Investigating WS' folder and call the file LA4

Figure 2. A personalized Individual Learning Plan Example

The change was made in this instance to reflect the individuals ready familiarity with digital pictures and her desire to set out a new challenge and learning experience in learning to use an unfamiliar technology. The changes at this level are simple but they did offer the researcher a level ownership and control over of the learning and thereafter assessment products. In essence embracing and embedding negotiation of activities in this way ensures that assessment is not separated from the individual learning needs.

Selection of autonomous learners at the point of entry: Researchers themselves believed that the act of enrolling online (the method of enrollment for the pathway) for a fully online research based degree set an expectation that the course would involve self reliance. The use of a range of pre-registration taster activities may also have filtered out learners for who the detailed methods of learning did not feel comfortable.

Exploring the nature of online autonomy

It became clear in the research online discussion, that the act of instigating a dialogue had actually caused researchers to consider the concept of autonomy and it was not necessarily something that was articulated or explicitly considered previously. In effect this meant that despite the program providing opportunities for autonomy there was no widely held acknowledgement of the benefits. Researchers were then engaging with an array of opportunities for autonomy but are not equipped with the vision of why they are engaged in this way and what the benefits are.

Learners within the program showed themselves to have different perceptions of autonomy, in their discursive explorations they associated to the concept of autonomy the juxtaposed terms of 'isolation' and 'social learning', and also 'freedom' and 'guidance' – paralleling. These associations echoed the way that authors in literature associated different meanings to the concept of autonomy. Particularly it was seen that autonomy could be a negative state of isolation or a positive social experience, autonomy within a group. It was also believed by researchers that autonomy means a sense of freedom, choice, but only after a period of guidance.

An analysis was undertaken (see Table 3) examining how each online autonomy promoting could cause isolation or how it could act to promote freedom and learner control, simultaneously the potential freedom offered by an enabling factor was also identified along with the guidance which is available to reach levels of social freedom and to avoid isolation within the online environment.

An emerging model for online autonomy

The researchers conceptual associations demonstrated how factors seen as promoting autonomy can be potentially isolating and though freedom is sought, guidance may be necessary to achieve this. Analyzing and interpreting the associations between these concepts led to the formulation of a proposed model outlining four possible states of learner autonomy in the online environment (depicted in Figure 3 below). The phases may be seen as:

- Guided social learning (NW)
- Social learner controlled (NE)

Table 3

An analysis of the relationship between autonomy promoting factors and the four terms identified as associated.

	Isolation	Social	Freedom	Guidance
Flexible access (learning whenever and wherever the individual researcher chooses)	Learning without peers in the same space and time can be isolating for some.	Encounters asynchronously and without geographic bounds spark relationships otherwise impossible to maintain.	Choice of study context.	The need for routine amongst some researchers means that guidance in this area may be needed.
No 'face-to-face' contact/physical isolation (creating independence)	Feelings of isolation created by separateness.	New types of relationship.	Freedom for online personas, freedom from physical attributes.	New forms of guidance sought.
Negotiation of modules	Maybe create a sense of being lost when common module content is not shared.	The negotiation process may be a social experience amongst peers and LF's	A sense of self determination may arise	Guidance may be needed to meet the criteria of a formal program and to assist researchers in exploring individual contexts.
Self-assessment	Self-assessment done in isolation may be seen as a secluded activity where judgments are difficult.	Self assessment can be completed using community support.	Self-assessment can be seen as a freedom from traditional and unilateral tutor feedback mechanisms.	Outcomes of this process can be an additional source of guidance even when self determined.
Peer Review	Generally seen as social negative reviews and private Responses may be seen to promote isolation.	Reviewing work in the community can be encouraging and motivating.	Peer review can be seen as a freedom from traditional and unilateral tutor feedback mechanisms.	Reviews and suggestions in this process can be an additional source of guidance.
Community dialogue	Community dialogue can combat isolation by providing a link to others.	Dialogue is a social activity.	Community dialogue can allow new ideas to be explored and contribute to personalization.	Dialogue can guide actions in research.
Support from LF's (guidance)	Support from LF's outside of the community may maintain researchers in isolation.	Facilitation may promote social learning through seeding, redirecting individuals back to the group and by weaving discussions to bring individuals together.	LF's can offer guidance that enhances researcher freedom, customizing advice, negotiation and the seeding of ideas for the researcher to develop.	Guidance may occur in community dialogue and through module negotiation, formative and summative feedback.

- Guided isolated learning (SW)
- Isolated learner controlled (SE)

The online learning autonomy model was formulated from interpretations of researcher discussion. Thus an emerging question is

How does the model work at an operational level?
How does it match individual experiences?

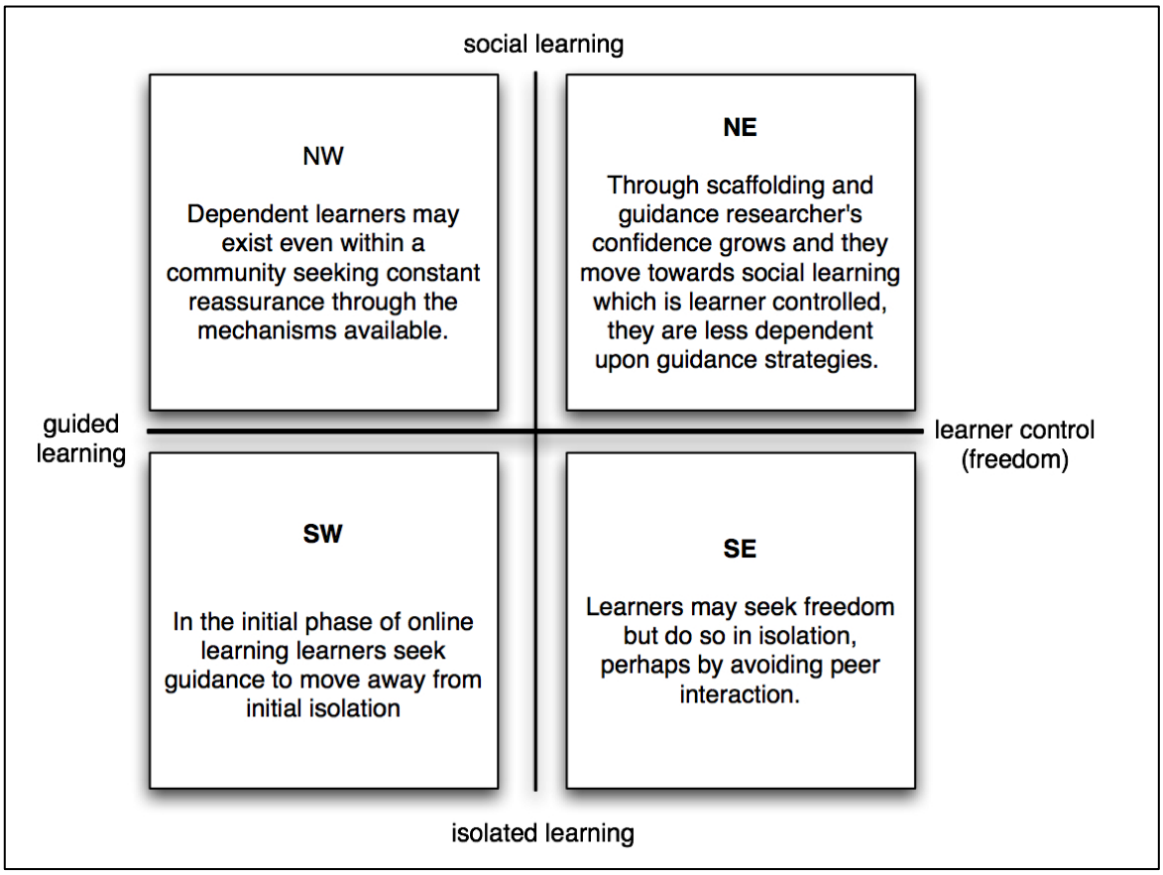

Figure 3 Phases of autonomy in online learning.

Changing states of autonomy: A case study

Researcher L arrived on the BA Learning Research Technology course in her role as a parent and play researcher in February 2005. She by her own measure had "low confidence" when she began the course. She felt isolated from others and "daunted" by the online environment, but quickly settled in to the community and became a social learner seeking engagement.

In examining this transformation, L herself identified a measure of the change that she felt over the first semester of the program visually marking her sociability on a scale between isolated and social for two points in time; at the start of the course and three quarters of the way through the first year (see Figure 4). Clearly, L felt that she had evolved from being an isolated learner to being a social learner.

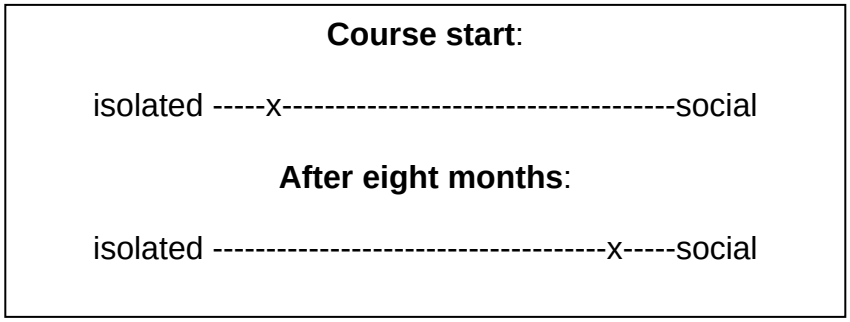

Figure 4: L's perception of her learning experience sociability levels

In marking herself on a scale of guidance need (see Figure 5) L noted the high degree of guidance sought at the beginning of the course; however into her second semester L noted the predominance of her need for freedom.

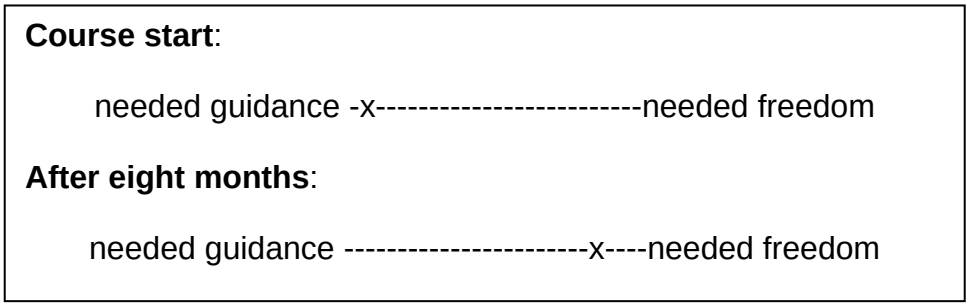

Figure 5: L's perception of her guidance need levels

L's journey towards autonomy was scaffolded and facilitated by the factors outlined hitherto. Through the journey she enjoyed freedom to make choices about where and when to study, used guidance from facilitators to combat isolation, used team facilitation as a way to frame choices in learning, used the ILP, took control in her learning through a level of negotiation of activities albeit not a deep level, engaged in peer review which was empowering, and deepened in significance because of guidance, asynchronous community and community trust. Moreover she used the module design (specifically reflection and review of strengths and weaknesses) to plan and control her pathway. L's journey took her from being a guided isolated learner to a social controlled individual learner. In effect she moved from the SW quadrant to the NE.

A fluid model

There is a great fragility in the online researchers journey towards autonomy. Although in time L considered herself to need less guidance and to be a learner in search of freedom and who had pulled away from isolation, a temporary change of situation can potentially undermine this for example some downtime of the community servers. Such an unexpected change can cause "panic" and a sense of isolation again. Thus temporarily moving L here in to the guided social learner (NW) quadrant of the autonomy journey. A return to a need for guidance and a sense of isolation can re-emerge.

Conclusions and further research

There are numerous ways in which autonomy may be promoted in online higher education. Six of the methods of autonomy promotion identified in the BA Learning Technology Research programme are congruent with those identified in a traditional context (community/peer learning, dialogue; peer review; reflection on learning; negotiated learning activities; and self-evaluation). In the context of the online programme each method has particular qualities and dimensions made possible by technology. Hence the autonomy promoting factors online may be in principle similar to those found in a face-to-face higher education environment but they are also distinguishable by the unique role of technology in shaping the exact online facets of the factors. For example peer review may be further enabled (possibly beyond the level possible in face-to-face) by asynchronisity and a community built on trust, whilst negotiation may be enriched by the opportunities provided by the electronic Independent Learning Plan's. Whether the technology deepens the potential for autonomy compared to face-to-face is perhaps an area for further research, though confidently here the technology can be seen to shape learners experience and the exact nature of the path to autonomy.

In addition to the parallels found with face-to-face higher education five factors not identified in literature as autonomy promoters were identified within the online program and these were explored. Of these five factors, three (flexible access, lack of face-to-face and self selection) exist because of the inherent nature of the online course; they are consequences of online environment. However the three factors act to be enabling because they sit in a wider approach that scaffolds autonomy, these factors alone may result in isolation without the guidance and scaffolding which are present by design.

The researchers perceptions of autonomy were peppered with apparent contradictions, as they viewed autonomy as isolation but also in a more positive vain as involving social interaction. A further contradiction was the idea that guidance was needed to achieve autonomy but that autonomy was in essence about seeking freedom. Through an exploration of these relationships a model depicting the possible phases of online learners autonomy has been formulated. The success of the autonomy promoting factors may be judged in terms of their ability to move learners to become social learner controlled individuals. The model proposed was an interpretation of the data and thus is context bound, whether the stages correspond to the experiences of learners in other online contexts, in face-to-face learning situations and at later stages within an undergraduate journey remains unknown, an area for further research.

The effectiveness of strategies used to foster autonomous learning is dependent upon the ability to oust isolationism as a force within the same factors that seek to promote degrees of freedom and self-determination. The path to online autonomy is determined by guidance provision as well as the availability of opportunities for freedom. How technology and the online environment can shape guidance and enhance opportunities for autonomous freedoms is charted here within one context, there is no order of priority attached to the factors in this exploratory study. Nor is the degree of interdependence factors explored in depth beyond noting that the whole pathway experience influence autonomy. This study relates to the first year of an online degree course; whether the autonomy related needs of researchers and the conditions for autonomy change as researchers progress to years two and three remains an area for further consideration.

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Editor's Note: There are many ways to learn, and certain techniques are associated with specific subject matters. For example, inquiry teaching is associated with the study of science to formulate and text hypotheses. Inquiry learning is also valuable for other subjects such as social studies because it promotes curiosity, imagination, critical thinking, and independent learning.

Assessment of Inquiry Teaching Competencies of Social Studies Teachers in Junior Secondary Schools in South Central Nigeria

Ede O. S. Iyamu, Celia O. Otote

Nigeria

Abstract

Though there is abundant justification for the inquiry teaching of social studies in Nigerian secondary schools, the competencies of the teachers to employ this instructional mode is doubtful. To assess such competencies, this study sampled 100 professionally trained social studies teachers from secondary schools in South Central Nigeria for observation in an instructional setting. It used a 20-item four-point rating scale covering important skills and activities related to inquiry teaching. On the analysis of data, it was found that the overall inquiry-teaching competence of the teachers was significantly below the acceptable level. It was also found that trained non-graduate teachers proved to be more competent in the inquiry teaching of Social Studies than the trained graduate teachers. The recommendations made include the need for effective Social Studies teacher education programme, in-service training and regular workshops for the teachers to update their knowledge of innovative pedagogy.

Keywords: social studies, inquiry teaching, teaching competencies, teaching skills, Nigeria

Introduction

The nature and objectives of Social Studies in Nigerian secondary schools emphasize students' familiarity with their physical and social environment; improved social relationships and interactions; skills and ability to thing reflectively, critically, creatively and independently all of which are relevant to problem solving. As a totality of man's experiences in the society and a problem – approach discipline, it becomes imperative to emphasize students' active participation in the learning process (Akintola, 2000). This is the hallmark of inquiry teaching (SSCED, 2000). Consequently, there is now a growing emphasis on the use of inquiry technique in the teaching of this subject in Nigerian schools.

There are a number of variations in conceptualizing inquiry teaching. While some view it as a process of asking and answering key social studies questions, others view it as the scientific method applied to social studies or the ways real social scientists conduct research (SSCED, 2000). The term Inquiry-teaching technique is employed when dealing with teaching/learning situation that is not being teacher-centred and authoritative in mode of operation. It emphasizes teaching in which the teacher does not dominate the class instructions, but gives some measure of freedom and opportunity for students to learn and find out some facts by themselves. It refers to the whole complex of instructional phenomenon in which the teacher makes use of a variety of methods and activities that encourage students' active involvement in the generation of their own knowledge (Yakubu, 2001). The idea of inquiry-teaching of Social Studies in this study is based on the views of Freiere(1970), Illich(1970) and Whitehead(1929) about the negative contribution of the prevailing teacher-dominated instructional strategies to relations of domination, oppression and dehumanization of the learners. While Whitehead(1929) views such approaches to schooling

and teaching as providing "inert" instead of "active" knowledge, Freiere(1970) says they lead to "banking education". Consequently, they advocated a radical pedagogy that seeks to identify, understand and critically examine the effects, consequences and power of methods, mode and the environment of teaching and learning in formal educational settings. It is against this framework that the present researchers decided to focus on the inquiry-teaching techniques of Social Studies teachers in Nigerian schools.. Such techniques seek to reduce the authority of the teacher through openness in the educational process, problem-based learning practices, consensus building, learning how to learn, group projects and integration of digital technologies into curriculum implementation.

There appears to be consensus among Social Studies educators including Mkpa (1993) and Niyi (1998) that inquiry instructional technique is relatively more effective than expository approach to the teaching of Social Studies. According to them, apart from students achieving more in cognitive terms from inquiry – oriented Social Studies instruction, this teaching approach contributes significantly to students' affective and psychomotor learning. Because this teaching technique encourages learning through active participation and experience, its use seems to be consistent with the nature of Social Studies as a totality of man's experiences in the society. Also, because this teaching technique promotes thinking that is associated with the resolution of problems, it is considered appropriate for teaching Social Studies as a problem – approach discipline. More importantly, because inquiry instructional technique is an attempt to make classroom learning reflect actual events, issues and problems in the society, it becomes a veritable means of helping the students to become more familiar with the needs and problems in their environment (Kadeef, 2000). Its use is also consistent with the provision of the National Policy on Education (FRN, 1981, 1998) with regard to the need to make educational activities centre on the learner for maximum self-development and self-fulfillment, and utilize modern techniques in educational delivery to encourage the practice of self-learning.

In recent times, much research attention has been focused on the teaching of Social Studies in Nigerian secondary schools with a view to ascertaining the adequacy and appropriateness of the teachers' methods of teaching and indeed the effectiveness of instruction. Investigations into the use of inquiry instructional techniques in the teaching of Social Studies in Nigerian Junior Secondary schools seem to have been focused mainly on teachers' frequency of the use of this technique and sparingly on the explication of the salient variables influencing its effective use (Mkpa, 1993; Iyamu, 1998 and Otote, 2004). In a sense, no research attention has yet been given to the assessment of the skills and competencies of Social Studies teachers for using inquiry techniques. The use of inquiry instructional technique as an innovative instructional practice can only be effectively implemented if the teachers possess the appropriate knowledge, skills and abilities related to its use in the instructional process. According to Boekaerts (1991), competence is learnt attitudes and aptitudes, manifested as capacities for controlling, actively struggling with and mastering life problems through the use of cognitive and social skills. Thus, as a learnt characteristic, the amount of it possessed by individuals can be measured and fostered through appropriate programmes or interventions.

Competencies for the inquiry–teaching of Social Studies encompass the teachers' awareness and understanding of some of the issues surrounding inquiry – teaching. These include knowledge of common ways of knowing; skills involved in inquiry and how to teach them; skills of questioning in inquiry teaching and ability to identify topics that are well suited to inquiry. Others are how to develop curiosity and independent thought in students (Brown, 1999; Jarolimek, 1977). They also include ability to elicit students' questions (Kona (2000). The present concern for Nigerian Social Studies teachers with regard to the acquisition of these qualities is born out of the fear that since most of these teachers have been used to the expository teaching approach and considering the existing inadequacies in teacher education in Nigeria, their awareness, equipment, orientation and

willingness to embrace and effectively use the inquiry teaching technique as a mode of teaching are bound to be questionable.

The Problem

Given the high premium placed on Social Studies in the Nigerian Junior Secondary School curriculum, the need to teach it effectively through the inquiry process is indisputable. What is perhaps uncertain is the inquiry-teaching competencies of the teachers who are currently teach the subject in the schools. Consequently, it is necessary to know the amount of competency that these teachers have for the inquiry teaching of the subject. Unfortunately, researchers in Nigeria have not focused well enough on the identification of specific inquiry instructional skills in Social Studies nor the systematic assessment of the teachers' competencies to use them (Gbenga, 2001). The question is: Do Social Studies teachers in Junior secondary schools in Nigeria have skills related to the use of inquiry-instructional techniques? This study is aimed at finding out the overall inquiry-teaching competences of the teachers and the influence of type of professional qualification on the inquiry-teaching competences of Social Studies teachers in Nigerian Junior secondary schools.

Hypotheses

The following hypotheses were formulated to guide the study.

1. The overall inquiry-teaching competence mean score of Social Studies teachers will not be significantly less than the acceptable level.
2. There will be no significant difference in the inquiry-teaching competencies of professionally qualified graduate and professionally qualified non-graduate Social Studies teachers in Nigerian Junior secondary schools.

Significance of Study

Social Studies teachers will find this study useful. It will not only help to increase the teachers' level of awareness and understanding of some of the issues surrounding the use of inquiry instructional technique, its findings will also provide the teachers with a feedback on their inquiry-teaching competencies as a basis for improvement in their instructional practice in order to enhance performance.

An assessment of the inquiry-teaching competencies of Social Studies teachers is essential in order to find out the extent to which the subject is effectively taught in Nigerian schools and indeed, provide insight into the extent to which the objectives of teaching the subject in the schools are being realized. Curriculum planners and evaluators as well as government and educational administrators need empirical data on the overall inquiry-teaching competences of Social Studies teachers in the Junior Secondary Schools to facilitate appropriate curricular policies and programmes for effective teaching and learning. More importantly, results of this study will be useful to Social Studies educators at the University and College of Education levels in terms of the effectiveness of their programmes in developing appropriate inquiry-teaching skills in teacher-trainees.

Procedure

This study employed the survey research design. It used a random sample of 100 professionally trained Social Studies teachers in the junior secondary schools in South Central Nigeria. The observation method was used for the collection of data. The choice of observation method for the study was informed by its potency for studying social events (Osuala, 1982; Yoloye, 1977). A 20-item four-point rating scale for measuring the inquiry-teaching competencies of social studies was

used. The scale ranged from Very Good, Good, Fair and Poor, which were, weighted 4, 3, 2, and 1 respectively. A teacher with the needed inquiry-teaching competence was expected to score up to the middle of the scale, which is 2.5 hypothetically obtained as follows: The exact upper limit (4.5) plus the exact lower limit (0.5) of the scale divided by two. This was taken as the acceptable level in testing the hypotheses. The instrument covered aspects like teachers' ability to involve students to identify real social problem related to the lesson of the day; ability to involve students to develop hypotheses in the lesson; ability to ask relevant questions; ability to help students plan how to study a question or a problem; ability to promote students' questions; ability to relate teaching of concepts and ideas to current issues and events in the local, national and international community; ability to guide students to sources of information and ability to coordinate students' different views. The instrument was pilot-tested and the split-half method was used to obtain reliability coefficient of 0.68. The investigators enlisted the assistance of ten professional colleagues from four universities to carry out the observation of the subjects in the actual classroom setting. Each subject was observed twice by each of two observers to produce four scores. The average of the four scores was used. This exercise lasted for six weeks. In the analysis of data, hypothesis one was tested using the Z test of significant difference between population and sample means while hypothesis two was tested using the Z test of significant difference between two means. The entire tests were carried out at .05 alpha levels.

Results

Below are the results of this investigation.

Table 1

Z-test test of proportion between population and sample means

Number of Subjects (N)	Hypothesized population Mean (μ)	Sample Mean $\bar{X}$	Sample Standard Deviation (SD)	Z Calculated	Z Critical Table Value
100	2.5	2.14	1.85	17.84	1.96

Based on the result of the data analyses in Table 1, hypothesis one is rejected, meaning that the overall inquiry-teaching competences of Social Studies teachers in the Junior secondary schools is significantly less than the acceptable level of 2.5.

Table 2

A Z-test of significant difference between the inquiry teaching competencies of trained graduate and non-graduate teachers

Category	Sample (N)	Sample Mean (X)	Std Dev.	Calc. Z	Crit. Z
Trained Graduate Teachers	22	2.06	3.21	3.34	1.96
Trained Non-graduate Teachers	78	2.11	2.89		

The result of the analysis in Table two indicates that there is significant difference in the inquiry-teaching competences of professionally qualified graduate and non-graduate Social Studies teachers in the schools. Therefore, hypothesis two is rejected.

Discussion

The result of the analysis of data in Table 1 showed that the social studies teachers in the Junior Secondary Schools are generally incompetent in the inquiry teaching of the subject. This finding corroborates the views of Mkpa (1993) and Popoola (2000) that the major problem of social studies education in Nigeria is the gross lack of appropriate pedagogical skills and competencies by the teachers. According to Whyte (2001), the professionally trained teachers do not seem to demonstrate acceptable level of pedagogical competencies probably due to the low quality of training that they received.

Ajayi (2000) has decried the conditions of teacher education programmes in Nigeria and asserted that they lacked the capacity to produce high quality professional teachers. It is likely that most of the teachers used for this study were not taught the skills and issues related to the inquiry process of teaching while they were in training. Over the years, according to Gbenga (2001), social studies teachers have found convenience in the use of expository teaching methods in the face of over-populated classes in the secondary schools and their lack of desire and morale to be innovative due to poor conditions of service and unattractive school environment.

However, these investigators had expected that the social studies teachers used in this study would obtain a much higher mean score on the inquiry-teaching competency scale than they did. This expectation was based on the fact that these teachers were professionally qualified, with Certificates and Degrees in education. Since this has not been the case, other questions that are fundamental to the teaching of these skills in teacher-education programmes in the country need to be raised.

Although the social studies teachers were found to be generally incompetent in the use of inquiry methods of teaching, they were however found to possess and demonstrate a few specific inquiry-teaching skills. Of the 20 specific competency skills that made up the rating scale used for the observation, their level of competency was found to be significant for only seven. These were skills related to questioning and utilization of students' contribution in the lesson. This finding is not surprising because questioning and answer method appears to be the major skills that most Nigerian school teachers possess, though some tend to abuse its use (Kissock, 1981). It is perhaps the only instrument of interaction between teachers and students. Although the teachers possessed the skill for promoting students' questions, it was observed that students' questions were not born out of curiosity or imagination or critical thinking. Rather, they were mainly responses to teachers' regular questions as: "Do you understand?" Is it clear? Students would ask such questions as: "What did you say is the meaning of…?" or "How did you arrive at the answer to this question?" or could you repeat what you said last?" These obviously are not the type of questions that imply students' understanding, reflective thinking, curiosity or active minds

The study revealed that the teachers' level of competency was not significant for the remaining 13 specific skills in the instrument. These were related to guiding students to identify real social problems related to the lesson; involving students to operationalize concepts as well as relating teaching to contemporary life. Others were related to guiding students to variety of sources of information and use of stimulating instructional materials. These deficiencies, according to Ben-Clays (1999), are reflections of the type and quality of training received by the teachers, for teachers tend to teach the ways they were taught. Hypothesis two in this study sought to test the significant difference between the inquiry-teaching competences of professionally qualified

graduate and non-graduate Social Studies teachers. The analysis of data showed that the professionally qualified non-graduate teachers demonstrated more competence than their graduate counterparts. Though this against expectations, it reflects the quality of teacher education at the two levels. The result also corroborates the earlier views of Ajala (2000) and Melford (1999) that teacher education in Nigerian Universities seems to be weak and inadequate in the aspect of principles and practice of education, compared to the College of education. According to them, teaching practice is poorly organized and supervised in the University Faculties of Education and students are not adequately exposed through microteaching. These, however, have been attributed largely to shortage of teaching–learning facilities, poorly motivated lecturers, over-population of students, most of whom are not academically and psychologically fit for teacher education, among others (Ajayi, 2000; Iyamu, 2000). These may have put the graduate teachers at a disadvantage in this study.

Conclusion and Recommendations

Two major conclusions could be reached in this study. These are: that the Social Studies teachers in junior secondary schools in Midwestern Nigeria lack adequate competence for the inquiry-teaching of the subject and those professionally qualified non-graduate teachers are more competent in the inquiry-teaching of Social Studies than the trained graduate teachers. Other conclusions that could be made, by implication though, is that the subject is not effectively taught the way it should be, going by its nature and objectives in Nigerian schools. Based on the foregoing conclusion, the following recommendations were made.

1. Social Studies teachers in junior secondary schools in Midwestern Nigeria should be exposed to in-service training to update their knowledge of innovative pedagogy.
2. The Ministry of Education should make journals and other periodicals on the inquiry mode of teaching available to the teachers.
3. Social Studies teacher education curriculum needs to be reviewed to place more emphasis on skills related to the inquiry teaching of Social Studies.
4. Social Studies teacher education should give adequate attention to microteaching.
5. Students' teaching practice should be more effectively organized and supervised to promote students' development of relevant teaching skills.
6. There should be regular workshops for the teachers for their professional growth.
7. Digital technologies should be introduced to all the schools so as to raise teachers' awareness of other sources of information for students' learning and become less authoritative in the instructional process.

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Editor's Note: The authors identified and compared experiences with ten difficult learner types. They looked at these from the perspective of learners at the beginning and the conclusion of their degree programs and discovered that there is little change in learner behaviors that define each type of learner.

Dealing with Difficult Online Learners:
Two perspectives, five best practices, and ten difficult learner types

Sharon L. Bender, Eileen Dittmar

United States

Two Perspectives

Two university professors have compared the characteristics of difficult online learners from their unique perspectives. Eileen Dittmar has worked with online learners at the start of their degree program and Dr. Sharon L. Bender has worked with them at the end of their degree program in the capstone project course. Bender and Dittmar have found that they can identify the same behaviors in learners regardless of whether the learners are at the start of their programs or at the end.

It is assumed that cognitive changes occur over time, increasing the learner's ability to make more mature intellectual decisions and that self regulation is expected to result with increased ability. Bender and Dittmar agree that learners become more adept at processing information and at cognitive processes that foster self-monitoring. However, they see that the same challenging behaviors persist throughout the learner's degree program. Potentially, if social interaction is also crucial for effective self-regulation, this experience is often inhibited in the online learning environment, which may account for the continuance in some difficult behaviors.

According to Bender and Dittmar, most difficult learners of all types do successfully complete their degree programs. Regardless of why they continue with difficulties, these challenging learners can be better managed if instructors are prepared to work more effectively with them. Therefore, Bender and Dittmar have devised solutions comprising five best practices to manage their ten difficult learner types. These core dimensions challenge and stretch the instructor's effectiveness and provide a meaningful approach to giving learners what they need to prosper in achieving their goals. The five best practices, as determined by Bender and Dittmar, comprise skill variety, task identity, task significance, freedom, and feedback. Without the application of the five best practices, learners will often join the ranks among one of the ten difficult learner types.

Five Best Practices

1. Skill Variety

Skill variety encompasses the degree to which assignments require a variety of tasks and activities involving the use of different skills and talents of the individual learner. This may include variety in the level of skill needed to complete assignments. Having variety of skill includes task enrichment activities and the opportunity to learn something the learner perceives as useful. Adults comprise the community of online learners and adults tend to have a high desire for growth through learning.

2. Task Identity

Task identity involves the degree to which assignments require the completion of an identifiable piece of work. This means doing significant projects or single assignments from beginning to end

with a positive visible outcome. For example, a technology learner who can work on a software development related assignment that means something in a real life setting is more interesting and rewarding than one that is not related to any real application. Task identity is a matter of identifying the assigned work with something tangible and useful.

3. Task Significance

Task significance hinges on whether the learner sees the work as having a substantial impact on the lives or work of other people. An example may be working on a project or assignment that can have a sizable effect on how people in the learner's environment will appreciate the knowledge that the learner is gaining.

4. Flexibility

Flexibility implies giving freedom, independence, and discretion to the learner in scheduling the work and in determining the procedures to be used in executing it. Learners want instructors to help them define goals, measure effectiveness, provide resources, and set deadlines. However, learners desire some flexibility to accomplish their objectives. All too often, online instructors exhibit a rigid methodology that deters the learners' need for flexibility.

5. Feedback

Feedback is a necessary dimension that looks at whether carrying out the activities required by the assignment results in learners obtaining information about the effectiveness of their performance. Even if an instructor must give constructive feedback to learners, it shows you care about their effort. When learners know that their instructor cares, they are likely to put more effort into their work. Many online instructors do not give enough feedback, yet feedback is one of the easiest variables for instructors to provide in managing difficult learners.

Employing these five best practices can be a significant approach to motivating and managing difficult learners in the online environment. Bender and Dittmar have identified the following ten types of difficult learners from their combined online teaching experiences for which many if not all of the best practices can resolve.

Ten Difficult Learner Types

1. Arrogant Learner

The arrogant learner *lacks appreciation*. These learners barely meet assignment requirements, delivering late submissions that are deficient in one form or another. These learners do not respond to instructor suggestions or compliments and have a way of putting the instructor ill at ease with their arrogance. These learners are ones who truly do not think they need the educational experience that the course offers them. They will fight learning anything new or finding anything valuable in the course. Having no respect for the instructor or the course, these learners glance over the work and decide to do as little of it as possible, yet these learners expect to earn a respectable grade for their small amount of effort. They have mastered the criteria dialog and question everything that may go against their uncooperative posture.

2. Careless Learner

The careless learner *lacks attention*. These learners do not pay attention to details and often omit the necessary preparatory work to understand assignments. They barely bother reading instructions and messages from the instructor. The work these learners produce and submit is weak. All too often, these learners do not take the time necessary to revisit their work before submitting. As a result the work can be undecipherable. Sometimes this carelessness is a way to hide poor skills like the unskilled learner or lack of confidence like the surprised learner.

3. Delinquent Learner

The delinquent learner *lacks devotion*. These learners are chronically late with assignment submissions. They do not devote the time necessary to produce their course work. These learners are incessant procrastinators. Work is submitted at the 11th hour and the result is a rushed product. Furthermore, these learners do not take the course seriously, jeopardizing their potential success.

4. Disjointed Learner

The disjointed learner *lacks direction*. These learners do not know where to begin oftentimes. It is difficult for these learners to see the big picture or how to break down the big picture into manageable chunks of work. They cannot visualize the outcome and they do not have a plan for the long haul. These learners have a challenging time throughout their course. They seem to constantly struggle and ask questions that may have been answered several times previously. These learners suffer from a lack of direction, resulting in poor time management and poorly completed work that is submitted late or not at all.

5. Irresponsible Learner

The irresponsible learner *lacks accountability*. These learners are unable to cope with the outlined responsibilities and resort to complaining. They blame everything and everyone for their inabilities. Oftentimes, these learners come around out of respect for the instructor and the school. However, these learners have the greatest likeliness to withdraw from the program. They may have too many unaccountable matters to overcome to reach a success level. These learners tend not to follow directions and they do not realize that this can oftentimes be the route to their problems.

6. Overachiever Learner

The overachiever learner *lacks patience*. These learners are exceptional performers, but they can be insistent on doing their own thing, not following prescribed systems. They will often request the flexibility to do things a new way or in a way that they are comfortable. These learners can be as much a pleasure as they can be a challenge to satisfy. They may read more into the assignments and have additional questions on top of questions. These learners place an enormous responsibility on themselves and on their instructor. They need constant feedback and to know how they are doing every step of the way. They will often advise the instructor on ways to do things better or more effectively.

7. Stubborn Learner

The stubborn learner *lacks flexibility*. These learners are not willing to cooperate because they perceive that they know a better way to do something. They oftentimes do not realize that the instructor has experience with the course content and knows how and why the deliverables need to be met as outlined. These learners often produce work for which they are unwilling to make required iteration. They do not understand or appreciate any changes or deviations from their perceived norm or to the course according to the instructor. These learners have a trust issue and they question any deviations from their expectations.

8. Surprised Learner

The surprised learner *lacks self-confidence*. These learners are not prepared for the online method of instruction and they find it difficult to impart from what they perceive to be the traditional approach. They do not realize that they need to posses the ability to work independently. These learners often do not put the effort into examining a new process in order to be prepared to meet what is expected of them. These learners may not be comfortable expressing their need for help

and risk falling behind. They fail to take advantage of learning opportunities. Oftentimes they take far longer to understand and be comfortable with the process of each new experience.

9. Unmotivated Learner

The unmotivated learner *lacks enthusiasm*. These learners are not very enthusiastic even though they may produce work on time and perhaps may even meet most of the assignment expectations. They do not reveal the matter of their lack of enthusiasm because there is no enthusiasm for doing anything above or beyond just what is assigned. These learners are silent and give little input to classmates. They seem to just be doing the time without any heart because of their lack of motivation. These learners wait for the instructor to do something to get them to act. They make a minimal effort to be involved. They may submit assignments diligently for a time and then disappear due to not having a sense of perseverance.

10. Unskilled Learner

The unskilled learner *lacks prerequisites*. These learners do not possess the necessary background or skills to manage the course work. They are not qualified to participate in the course, but they are hoping they can manage it somehow. Oftentimes these learners are open about their inabilities and they seek help. Sometimes these learners lack the basic skills of university-level reading and writing. They typically spend more time doing the work than other learners. However, with perseverance and willingness to put forth the time, these learners can deliver and succeed. These learners tend to appreciate any help they can garner and do not hold back any praise they have for all who helped them be able to deliver.

Summary

All of these behaviors show up in the traditional classroom, but online they present an extra special challenge. Learners can hide out in essence. And without seeing them in person, the instructor is not very real to them. This is something that online instructors need to overcome. All learners present some sort of challenge even those that are expressly talented. Hopefully by identifying the ten difficult learner types and using the applicable best practices, learners will respond appropriately. Compromised or difficult learners abound in both the traditional and online learning environments, but they may have unique complications depending on their learning platform.

In addition to applying the five best practices, Bender and Dittmar believe that learning can be made much more enjoyable if learners are better prepared. Bender and Dittmar have revealed that difficult online learners are likely to be experienced at any time. Perhaps the self-assessment would provide a starting advantage or a way to get a tune up along the way. In any event learners may experience a less challenging journey if they are more versatile and prepared for the learning venture in addition to working with instructors who are equally prepared to manage the challenges in dealing with difficult online learners.

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Dr. Sharon L. Bender has served as an online professor since 1999, largely facilitating the Capstone Project course and serving on an Institutional Review Board (IRB). She holds the Doctorate in Organization and Management, the Master of Science in Information Management - Technologies Focus, the MBA, and the Graduate Certificate in Social and Community Service. Her publications concern a range of exploratory topics. To see more about Sharon, please visit her Web site at www.sharonbender.com.

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