

Effect of Educational Open Access Journals on English Language Bachelor Students' Achievement and Attitudes

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Abstract: Effects of educational Open-Access journals on the achievement and attitudes of 48 English language bachelor's students were investigated. For 4 weeks, the control group (n=26) participated in lectures while students in the experiential group (n = 22) individually and in groups worked on educational research papers from open accessed on-line journals during 15-30 minutes of their weekly lectures. Findings indicated that (a) course professors believed that they had covered the course contents in class; (b) experimental students demonstrated significantly higher levels ($p > .01$, $p > .001$) of perceived knowledge and achieved significantly better ($p > .01$) than did control students on written and videotaped participation assessments; and (c) students and professors showed positive attitudes towards using educational on-line open journals. Data suggest that proper implementation of educational open accessed on-line journals may benefit TESOL education.

Keywords: Open-Access journals, The Internet, English Language Bachelor Students' Achievement, Constructivism, English Language Bachelor Students' Attitude, Learning Technologies

Introduction

Student searches would assuredly move beyond the mainstream knowledge and extend the search for meaning within significant historical, social, and political places. This challenges the dominant teaching style of "I lecture, you learn" by encouraging students to actively construct their knowledge and education while building on their preexisting knowledge base. Questions would be asked and challenges would be made. Textbooks and teachers would not be the only source of knowledge with the same predictable, narrow viewpoints. Students would question and view the world in broader perspectives.

The Internet would emerge to accommodate new ways of knowing which challenge power relations within the classroom to stimulate students' learning and increase their academic achievement and attitudes. This is the purpose of the preset study. It investigates effects of educational open accessed on-line journals on the achievement and attitude of 48 English language bachelor's students. The paper is presented in eight main sections. They are Purpose of the Study, Research Hypotheses, Significance of the Study, Open Access Journals, Theoretical Framework, Design of the Study, Results, and Discussion.

Purpose of the Study

This study investigates effects of educational Open Access journals on the achievement and attitudes English language bachelor's students

Research Hypotheses

The hypotheses of the study are:

1. Course instructors will cover the course contents in class
2. Experimental students will demonstrate higher levels of perceived knowledge.
3. Experimental students will achieve better than do control students on written and videotaped participation assessments.
4. Students and professors will show acceptance of using educational on-line open journals.

Significance of the Study

To the best of our knowledge, there has been little or no empirical research conducted to investigate the effect of educational Open Access articles on English language bachelor students' achievement and attitudes. Thus the study could evidently fill a gap in the research.

Theoretical Framework

Both cognitive and sociocultural learning theories emphasize the conceptualization of learning as a constructive process instead as a result of maturation or habit formation process. However, unlike cognitive constructivists who put an emphasis on cognitive process, socio-cultural constructivists believe that a major part of achieving higher psychological functioning is contingent upon internalization which is a process that consists of the following transformational series: 1. External activities become internalized; 2. Intrapersonal processes replace interpersonal ones; 3. Developmental events trigger the

transition from interpersonal to intrapersonal. This is the interplay between the external forces and internalization of activity that creates an environment for learning and higher level psychological processing to occur. In other words, “the most significant moment in the course of intellectual development, which gives birth to the purely human forms of practical and abstract intelligence, occurs when speech and practical activity, two previously completely independent lines of development, converge.” (Vygotsky, 1978, p. 24) This convergence of speech and application creates the opportunity for learning to take place. They work together rather than independently to create learning environments.

However, because of technology today “it is easier to create environments in which students can learn by doing, receive feedback, and continually refine their understanding and build new knowledge”. (Bransford et al., 2000, p. 26) Technological tools have been reviewed, researched, and regurgitated that they open a floodgate of learning opportunities. (e.g. Jonassen 1996; Jonassen et al., 1998; Jonassen 1999; Gee, 2004; Cummins et al., 2007; Duran, 2008) It was found that they foster understanding and cognitive development since it provides a different approach to teaching, a display of complex ideas that are abstract, organizes our thoughts in a graphical ways, etc. However, researchers argue that there are dimensions for knowledge generation and critical thinking when technologies are used to create constructivist learning environments. Jonassen (1999), for example, identifies three dimensions which are engagement, generativity, and control. They are consistent with the core principles for designing effective learning environments proposed by different researchers. (Bransford et al., 2000, Boettcher, 2007)

Open-Access Journals

In spite of the main argument against Open-Access journals which is about their negative influence on the overall quality of scientific journal publishing, many of their supporters continue to assert that Open-Access articles serve the interests of many groups such as authors, readers, teachers, students, libraries, universities, journals, publishers, funding agencies, governments, and citizens. Suber (2013), for example, argued that Open Access can serve the interest of the previous groups. He stated that for readers like our participants in the study:

OA gives them barrier-free access to the literature they need for their research, unconstrained by the budgets of the libraries where they may have access privileges. OA

increases reader reach and retrieval power. OA also gives barrier-free access to the software they use in their research. Free online literature is free online data for software that facilitates full-text searching, indexing, mining, summarizing, translating, querying, linking, recommending, alerting, "mash-ups" and other forms of processing and analysis. (Suber, Para. 14, 2013)

For teachers and students like the participants of our study, we find that "OA puts rich and poor on an equal footing for these key resources and eliminates the need for payments or permissions to reproduce and distribute content." (Suber, Para. 14, 2013)

In the literature, one of the few research studies conducted to investigate advantages of Open-Access journals was Eysenbach's (2006) study. It was a longitudinal bibliometric analysis of a cohort of Open Access and non-Open Access articles published between June 8, 2004, and December 20, 2004, in the same journal (*PNAS: Proceedings of the National Academy of Sciences*) The study found that articles published as an immediate Open Accessed article on the journal site have higher impact than self-archived or otherwise openly accessible Open Accessed articles. We found strong evidence that, even in a journal that is widely available in research libraries, Open Accessed articles are more immediately recognized and cited by peers than non-Open Accessed articles published in the same journal. Open Accessed is likely to benefit science by accelerating dissemination and uptake of research findings.

Design of the Study

English language bachelor's students (N = 48) in four sections at a university in the west region of Saudi Arabia were administered a survey to decide if they had or they would have any educational instruction from Open Access journals other than their weekly lecture. Eight students, identified as having had or presently receiving outside instruction, were assigned to the control group. This forced assignment and classes with odd numbers of students resulted in the unequal distribution between the two groups. Therefore, half the students in each section were assigned to the control group (n = 26), and the remaining students in each class were assigned to the experimental group (n = 22). The experimental group worked individually on websites of open accessed journals using Directory of Open Access Journals (DOAJ) for 15-30 minutes per week during lecture. The

control group participated in weekly lecture activities and had no access to the journals.

To minimize discussion among peers, experimental-group members were asked not to discuss the website until the study was concluded. Students used DOAJ to access on-line journals in lecture rooms provided with computers in 14 study weeks and doubled their computer assignments the day following an absence. Only the first two computer sessions were monitored to be sure students encountered no problems.

Following treatment all students completed Likert-type attitude surveys containing specific response choices created by the author. I varied response descriptors and positive/negative polls in an effort to maintain respondent focus of attention. The control-group survey included questions about perceptions of specific knowledge regarding writing research proposal. The experimental group survey included the same questions, and additional questions concerning educational open accessed journals were also included.

Following an opportunity to view any topic of the course they wished, the professors completed a Likert-type survey designed to find out if they felt the information to be assessed had been adequately covered in lecture (see Table 1). The professors responded to a 5-step continuum anchored by "not at all" and "comprehensively." Additional questions related to the professors' opinion of on-line journals, possible irritants regarding accessing and using on-line journals, and any changes observed in the experimental group.

Table 1:
Course Professor Responses Indicating Perceived Adequacy of Material Covered in Lecture

Questions	Responses					M	SD
	Low		High				
	1	2	3	4	5		
How well do you think you have covered research proposal . . .							
. . . Introduction?	-	-	1	2	1	4	.81
. . . Theoretical framework?	-	-	1	-	3	4.5	1
. . . Statement of the Problem?	-	1	-	1	2	4	1.41
. . . Purpose of the study?	-	-	-	1	3	4.75	.50
. . . Review of the literature?	-	-	1	2	1	4	.81
. . . Questions and/or hypotheses?	-	1	-	2	1	3.75	1.25
. . . Methods?	-	-	-	2	2	4.5	.57
. . . Procedures?	-	-	-	3	1	4.25	.50
. . . Significance of the Study	-	-	2	-	2	4	1.15
Overall	-	2	5	13	16	4.19	.89

Note. A dash (-) indicates no response.

Several assignments ended with a test designed to verify the student had completed the material presented. Students did not repeat assignments; however, elaborative feedback related to each incorrect answer was presented.

Students completed a researcher-designed written posttest assessment, including multiple-choice, matching, and short-answer material designed to assess each student's knowledge about the course contents. Short-answer responses allowed the student additional latitude to account for knowledge variations among different course textbooks and on-line journals. This assessment only contained material the professors believed they had covered; therefore, the assessment differed in form and presentation from material contained in the on-line journals. Students were asked to write "I don't know" for items they could not answer, providing me some assurance that the students had not accidentally skipped the item. Testing took place during a single lecture.

A videotaped posttest, conducted to determine participants' active learning, requested students to work in groups and pairs, do presentations, and make discussions and search for information in the journals on-line as taught. Students were videotaped in random order and assigned a number displayed on the tape.

Two professional educators with PhD degrees in English language education independently evaluated the written and video assessments. One evaluator viewed Directory of Open Access Journals during the development stage to evaluate the contents of some on-line journals and recommend some of them for students to use. The other evaluator did not have any knowledge of the contents of on-line journals. Evaluators graded the written tests based on their own independent criteria. Video evaluation involved a researcher-developed checklist in which the evaluators indicated the observed students' active learning approach and evaluated the acceptability of the contents. Independently judged evaluations of the video and written assessment were analyzed using the Pearson product-moment correlation coefficient that indicated an acceptable interjudge reliability of .91 for the written assessment and .84 for the video assessment.

Results

Data was analysed using free on-line calculators. The findings confirmed all the hypotheses of the study.

To determine whether the professors believed they had covered the course contents, I calculated the mean responses and associated standard deviations for the appropriate survey questions (see Table 1). Results indicated that all mean responses were 3.75 or higher on a 5-

point scale with an overall SD range of .50 to 1.41. Generally, the professors seemed to believe they had covered the assessed material.

I calculated student responses on the appropriate survey questions to determine the students' perceived knowledge of the assessed areas (see Table 2). T-tests revealed that computer responses were statistically or very statistically significant in all areas.

Table 2:
Results of T-Test Analysis of Students' Perceived Knowledge

Question	Traditional Lecture (n=26)		Traditional Lecture & on-line Journal (n=22)		t
	M	SD	M	SD	
How much do you think you know about research...					
... Introduction?	3.42	0.90	4.00	0.62	2.53*
... Theoretical framework?	3.38	0.94	4.00	0.87	2.33*
... Statement of the Problem?	3.50	0.95	4.00	0.69	2.05*
... Purpose of the study?	3.54	0.99	4.09	0.75	2.14*
... Review of the literature?	3.50	0.86	4.05	0.58	2.53*
... Questions and/or hypotheses?	3.50	0.71	4.00	0.69	2.46*
... Methods?	3.31	0.97	4.18	0.73	3.46**
... Procedures?	3.42	1.03	4.23	0.69	3.12**
... Significance of the Study?	3.62	0.98	4.18	0.73	2.22*
Overall	3.47	.93	4.08	.71	2.54*

* $p < .01$. (Statistically significant)

** $p < .001$. (Very statistically significant)

Scoring of the students' written and video assessments consisted of a liberal score based on both evaluators' assessment that placed the advantage toward the student. For a response to be counted wrong, both evaluators had to mark that specific response wrong. If either evaluator counted a response correct, the response was evaluated as correct. This procedure allowed latitude for teaching style, presentation, terminology, and interpretations.

Written and video assessments were analyzed by comparing percentage of items judged correct across groups. Based upon a possible total of 100, noncomputer written scores ranged from 60 to 93, with a mean of 79.69. Computer written scores ranged from 76 to 97 with a mean of 87.72. This difference between groups was significant on the Mann-Whitney U test ($n_1 = 22$, $n_2 = 26$ $p < .01$). Noncomputer scores on the video assessment based on a possible total of 100 ranged from 58 to 91 with a mean of 76.26. Computer video scores ranged

from 60 to 97 with a mean of 85.36. This difference between groups was significant on the Mann-Whitney U test ($n_1 = 22$, $n_2 = 26$ $p < .01$).

Table 3:
On-line Journal Group Responses Indicating Perceptions of on-line Journals

Questions	Responses					M	SD
	Low		High				
	1	2	3	4	5		
Did the journals help you understand how to do research?	-	-	9	5	8	3.95	0.89
. Do you think the on-line journals would have helped you work with other students?	-	1	6	8	7	3.95	0.89
Were you excited about learning how to do research?	-	-	3	10	9	4.27	0.70
Did the journals help you participate with your teacher more inside classroom?	-	-	5	9	8	4.13	0.77
Do you recommend on-line journals to students in the other group?	-	-	-	8	14	4.63	0.49
Are you going to use on-line journals in the future?	-	-	3	8	11	4.36	0.72
Overall						4.21	0.74

Note. A dash (-) indicates no response.

I analyzed experimental student attitude toward open accessed journals by tabulating individual responses followed by the associated mean and standard deviation (see Table 3). All mean responses were 3.95 or higher on a 5-point scale, with a standard deviation range of 0.49 to 0.89. Overall, the students seemed pleased with open accessed journals. When asked if they wanted to use open access journals in the future, 21 students responded yes. When asked if they found prestigious journals, and had a computer at home, would they subscribe to them, 20 students responded yes.

Results of 7 questions related to the professors' attitude toward open accessed journals and their implementation showed a strong propensity toward acceptance of open accessed journals and their perceived value. None of the professors believed that the students had missed too much of their regular lecture, and all the professors indicated they had noticed improvement in the classroom participation and/or attitude of the students using open accessed journals as opposed to those who did not. All the professors indicated they would adapt their teaching in order to use open accessed journals, they would

subscribe prestigious journals if it were possible, they thought it would be beneficial to have research journals for each section students, and they would have students use them followed by discussions/presentations.

Discussion

Findings in this study suggest that on-line open access journals were an effective means of TESOL education, which does support previous research. Previous investigations reported that students using the Internet learn better than students who received traditional instruction alone. (e.g. Jonassen 1996; Jonassen et al., 1998; Jonassen 1999; Gee, 2004; Cummins et al., 2007; Duran, 2008)

One possible reason for the significantly different achievement ratings between groups may be the learning environments which the Internet can create for students. It seems reasonable that students involved in traditional learning environments may not learn better the material presented as appropriately as they learn in environments in which they learn by doing, receive feedback, and continually refine their understanding and build new knowledge. (Bransford et al., 2000)

Videotape analysis indicated that computer students were more successful in applying their acquired knowledge to design research studies than students in the non-computer group. Also, videotape analysis showed that the Internet students were more active in participation than students in the non-computer group. These results, coupled with the written assessments, suggest that students were not only able to learn from on-line journals but to be active learners who can transfer what they learned to their research.

Overall results indicated a strong acceptance of on-line journals. Both the professors and students indicated a desire to have and use on-line journals, and there was a perceived educational value for implementation. However, the attractiveness of on-line journals was not fully realized until the conclusion of the study, when most of the students asked whether there were more directories of open access journals, where they could access more prestigious journals, and why there were no more directories of open access journals. Interestingly, their initial approach to the Internet was not one of surprise but one of comfort and ease with using open access journals.

Results of this study seem to indicate that open access journals were effective in raising student achievement levels in the areas of research design investigated and that the employment and proper use of similar educational open access journals could also significantly benefit not only students in the area of TESOL education but also students in other academic fields. However, several limitations were inherent in the

design of the study. First, in order to find a large enough population four different sections were used. Therefore, differences between course professors, student demographics, facilities, and equipment are only some of the factors that may have influenced the results. Second, the decision to assign students with on-line journals experience to the control group and the adjustment for classes with an uneven number of students may have influenced results. Third, even though students were asked to not discuss the on-line journals amongst their peers, this behavior was never verified. It can be assumed that any such discussion probably benefitted the noncomputer group's assessments. Finally, all researchers must be cognizant of the "halo effect" that can influence students such as this where a group of students receives a different type of attention and pedagogical practices than do their peers.

The various ways in which educational on-line journals can be used are as numerous as pedagogical practices and course objectives. It seems reasonable that the success demonstrated here could be equaled by similar on-line journals written for other courses currently taught in universities. Based on the quantitative and qualitative results in this study, future investigation in implementing on-line journals in curriculum is warranted and should be actively pursued, thus providing an empirical basis for guidance in future development, research, and implementation.

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