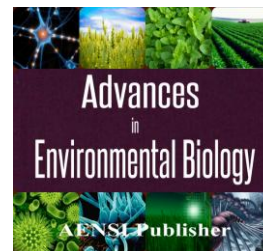




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### Performance Indicator in Online Distance Courses: Evidence from Shiraz University

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#### ABSTRACT

Faculties preparing themselves to teach online courses need to be informed not only of the strong student interest in online courses, but also of what factors may influence student performance, so these courses can be crafted in ways that maximize the learning potential. For this study a sample of 138 undergraduate and 50 graduate IT students in 6 courses selected from Faculty of Electronic Educations (FEE) of Shiraz University for statistical analysis of their grade performance and the relationship with various indicators. The research results include findings that age and gender related differently for undergraduate and graduate students to performance in distance learning courses, and the undergraduate grade point average (UGPA) and age are significantly related to overall course performance for graduates.

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### INTRODUCTION

By the use of internet, learning has become significantly more flexible and content sources much more accessible. Creating, sharing and knowledge capitalization are all facilitated by the internet. Wider sources of learning are provided in internet-based courses and worldwide expertise can systematically be brought to the student's desktop [5].

As noted, online distance learning has become very popular in last decades as a vehicle of learning for any purpose. Increasingly more university courses are being delivered to the students through the medium of Internet. Delivering online learning to the learners often can influenced by issues mostly influence learning potential.

Discovering criteria that may affect student performance in online courses has been of a great interest and concern among researchers, course developers, students, staff and faculties since the introduction of online learning in educational systems. Many of authors have published a great volume of studies on this area and mostly received to controversial results. Many of these literatures have their own weaknesses or strengths. Separate from their weakness or strength they aimed at reinforcing online courses effectiveness and learning potential.

Our study is also a unique study because none of the variables in the study are self-report. In this study we investigate the effect of some variables on overall course performance (grade) and also investigate their interconnections and multiple influences on performance in online courses. The study starts with a comprehensive review of the literature on the topic, followed by statistical analysis and concludes with some remarks and future research suggestions.

#### Literature review:

The literature on online delivery in the field of education, has flourished since the early 1990s with the rise of the internet [11]. There has been a great interest in a variety of issues linked to online delivery since the advent of internet. Several studies are conducted on performance indicators or effectiveness in online learning programs. Some of these studies have deficiencies with the issues such as representative groups, size of sample,

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neutrality in genders and etc. separate from such deficiencies in some studies; other studies also have controversial results in the area of performance indicators in online courses.

Many of published data on in the area of performance indicators in online courses are related to demographic factors influence on performance. Anderson, Benjamin and Fuss in the survey of economic course found men significantly outperform women. Bouillon and Doran [2] in a survey of accounting, also found men significantly outperform women. Cheung and Kan [3] in the survey of communication course found that women significantly outperform men. Their s Similarly Launius [8] in a survey psychology course found that women outperform men. Koch [6] and Larson [7] in their surveys found no significant gender based performance in online courses.

Regarding technology, Peiperl and Trevelyan [9] found that younger students outperform older students because of technology orientation. Alternatively greater age may be associated with the mature perspective that might counterbalance any technology advantage [3,4,11]. found that previous use of webCT (a web publishing software for developing online courses developed in department of computer science, University of British Columbia, Canada) significantly relates to performance in online courses. Our research generally supports the relationships of demographic variables and course performance in online learning courses. Some studies concentrated on the influence of social and community-related measures on performance and success of online programs. Rovai [10], conceptualize four characteristics of a learning community and posits that they enhance participant satisfaction and program effectiveness: trust; spirit; interaction and common learning expectancies. Our study concentrates on demographic and non-self-report measures for finding the relationship between variables and performance in online education.

#### *Methodology:*

##### *Sample:*

The sample in this study consisted from 138 (69 men and 69 women) undergraduate and 50 graduate students enrolled in six online distance learning courses in Faculty of Electronic Educations (FEE) of Shiraz University. The ages of participants ranged from 19 to 41 with an average age of 21.7 (SD=3.95) for undergraduates and 30.2 (SD=7.01) for graduates. All the courses were in the area of Information Technology (IT) taught by two instructors with similar teaching styles. The format of the course in our study was very popular and contained email communication, lives synchronous chats, asynchronous discussion pages, and electronic submission of writing assignment and exercises (acquired grades for the assignments used as a variable in the study.)

##### *Variables and Measure:*

The aim of study was to the relation of various variables on students' performance in online courses. The study variables include demographic variables (age, gender and prior work experience), student prior academic records (high school GPA for undergraduates and undergraduate GPA for graduates), and course performance measure (individual assignment grade recorded as the number of points out of 100 by a third party). Final course grade was the major dependent variable in the study. (Where A=4, B=3, C=2, D=1, and F=0).

##### *Results:*

At the first stage of the study we computed Pearson product- moment correlation coefficients for investigating correlations between the major performance variable (grade) and other variables in the study. Then multiple regression analysis computed for each sample to investigate multiple predictors of online course performance. Significance levels of 0.05 and 0.01 were used for statistical analysis.

Because these two samples are from different populations, we represent the results for each sample separately.

##### *Undergraduate sample:*

For this sample the only variables related significantly to grades in online courses is individual assignment grades (IAG) ( $r=0.47$ ,  $p<0.01$ ).

High school grade point average (HSGPA), age and gender were unrelated to the course performance.

Regression results in this group showed that when we control gender and age, individual assignment grade (IAG) significantly ( $F=33.12$ ,  $p<0.001$ ) relates to grades (overall course performance).

##### *Graduate sample:*

For this sample variables related significantly to grades in online courses include; age ( $r=0.27$ ,  $p<0.01$ ), amount of work experience ( $r=0.23$ ,  $p<0.01$ ), undergraduate grade point average (UGPA) ( $r=0.20$ ,  $p<0.05$ ), Gender ( $r=-0.25$ ,  $p<0.01$ ) and IAG ( $r=0.35$ ,  $p<0.01$ ).

**Table I:** Pearson product-moment correlations for major variables in two samples.

Table I Pearson product-moment correlations for major variables in two samples

Variables	Undergraduate grades	Graduate grades
Age	-0.08	0.27**
Gender	0.14	-0.25**
Prior academic record	0.02 (HSGPA)	0.20* (UGPA)
IAG	0.47**	0.35**

Notes: \* $p < 0.05$ , two tailed; \*\* $p < 0.01$ , two tailed. Age= participant chronological age, Gender= female: 1 male: 2, UGPA= undergraduate grade point average, HSGPA= high school grade point average, IAG= individual assignment grade.

**Table II:** Multiple regression results for undergraduates and graduates.

Table II Multiple regression results for undergraduates and graduates

Variables	Undergraduate $\beta$	Graduate $\beta$
Age	-0.04	0.11
Gender	0.17	-0.05
Prior academic record	-0.05 (HSGPA)	0.07 (UGPA)
IAG	0.39*	0.22*

Notes: \* $p < 0.01$ . Age= participant chronological age, Gender= female: 1 male: 2, UGPA= undergraduate grade point average for graduates, HSGPA= high school grade point average for undergraduates, IAG= individual assignment grade Multivariate regression result for graduates in this group indicated that while controlling age, gender, and prior academic record, grade significantly ( $F=43.44$ ,  $p < 0.001$ ) relates to individual assignment grades. These results are similar to undergraduate results. See the results in Table I and Table II.

### Discussion:

Some of studies published on performance indicators and effectiveness in online courses have some deficiencies regarding their sample size, neutrality in genders, representative groups, separation of standard tests from their institutes, etc. for example Bouillon and Doran [2] in the survey of accounting found that men better perform than women. In their study the majorities of participants were male and may be this difference, has biased the results. Additionally, courses in area of economics [1] and communications [3] may have favored men and women respectively. For overcoming these deficiencies we selected a gender neutral sample (the number of men and women was equal).

In the study of Volery and Lord [11] their sample size were small (47 students) and we believe that their sample was not representative. For this we selected a large sample for our study. This study also is a unique study because none of variables in it are self-reported. Authors decided to lower impacts of behavioral variables in the study. In the undergraduate sample, we didn't find any relationship between gender and course performance. This may be because of low maturity in both sexes in undergraduate sample.

Women do perform better than men in graduate sample. This finding is in consistence with Bouillon and Doran [2], Cheung and Kan [3], and Launius [8]. May be women have different learning styles from men. Also it may be instructor attributes better fit to women characteristics or learning styles. This subject may be an area of future researches. We can also assume that maybe this is because of their interest in online class activities.

We didn't found a significant relation between HSGPA and performance. So we can contend that while some students are worry about their past performance they can begin from the first point in the online course. But, because success in higher degrees needs more expertise and skills, UGPA scores relates significantly with the grade. This issue is accredited by other finding that shows work experience relates significantly to the performance in graduates. Therefore we contend that the factor that affects course performance in this case is level of expertise. Student ages in graduate sample were a significant variable and old students tend to get better grades. As we know, e-courses are self-regulatory courses. May be the late finding is due to inability of self-regulation in young students. May be work experience in old students awarded them technical and social abilities so they can perform better in online courses (as we found that work experience has a significant relation with performance). This study was completely based on non-self-report measures. Therefore more studies can also conduct on behavioral and self-report aspects. Learning styles also can be a good area for future research. There will be a need for research in some other areas include student and professor characteristics, environmental effects on performance, class interactions and motivation, course requirements, length of course and other areas considered to be important on student performance. Future studies may be also determining student performance on standard tests or non IT courses.

### Conclusion:

A great volume of studies is published on course performance and e-learning effectiveness and each of them focused on a specific area of online course performance. Separate from their strength or weaknesses, they all conducted to have a contribution in theory or practice of online distance learning. This study also was a

unique study because no factors in it were self-report. The interconnection between different variables of performance in online courses and the specific relation of each supposed variables with overall course performance identified. Online program developers and universities can also focus on these results to better design, develop and deliver online courses. Although the results in some areas are controversial and even in opposition, universities maybe invest in the areas of their interest that is less controversial.

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