

Towards Enhancing Academic Excellence of Civil Engineering Undergraduates via Utilising Study orientation Devices

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Abstract

The purpose of this research is :to measure: the study orientation skills: and to provide remedial tools in correcting respondents' study orientation skills faults. The research also measures the relationship between study orientation skills and the academic performance among first year students of University Malaysia PAHANG. The measurement of study orientation skills is done by innovating a website based on a survey of study habits and attitudes questionnaire (SSHA); <http://portal.ump.edu.my/survey>. The students' study orientation skills are analyzed and sorted into three groups of achievement; the higher achiever, normal achiever and lower achiever. The treatment tools comprise of the treatment website; <http://portal.ump.edu.my>, a textbook (Study Orientation Skills in Action, Ghani format of note-taking, DVD on the study orientation skills and lecture on study orientations skills aspects. The assessment on the academic performance is based on grade point average (GPA) scores of UMP undergraduates from their first semester and second semester results. 59 respondents are randomly selected from undergraduates students from the Faculty of Civil Engineering & Natural Resources. The research uses Quasi-experimental design with a pre-test and post-test by comparing the group samples. The finding has shown that the study orientation skills (SOS) website was able to measure SOS effectively among the respondents . There is a significant difference in SOS and academic performance between pre-test and post test scores of the respondents. The results also show that there is a correlation between SOS and GPA scores in pre-test and post-test within the group.

Keywords: Study Orientation Skills, Study Habits, Study Attitudes, Academic Performance

1. Introduction

New students enrolling in tertiary institutions will feel disorientated as they face learning difficulties due to a transition period and changes in their study orientation. A lot of research has been done to show that changing environment of study among undergraduates students who have to orientate themselves from the various systems of learning from dependent, teacher centered, monotonous and convergent into independent, student centered, autonomous and divergent form of learning (Anna, 2009; Amanda, 2008). Hence, a study on their study orientation skills will be able to determine their study difficulties encountered by these students and by knowing the faults the students can easily re-correct them by using a series of remedial devices and improve their academic performance.

1.1 Statement of Problem

There is so much literature and research done by well known scholars in the field of study skills to measure study orientation skills among undergraduates using the Study Skills Habits and Attitudes questionnaire. These studies used traditional methods of assessing the SOS and GPA among undergraduates across many disciplines including engineering, humanities and medical. Eventually these traditional ways in measuring SOS takes time to interpret the data. Reviewing the academic performance among those graduated in 2006/2007 and the entry qualifications of new students, UMP students are considered as average students. The academic performance of those graduated from the Civil Engineering faculty in 2007 show that only 8% passed with a first class honors in, 92 % second class upper and lower class honors. With regards to the above student's academic performance, this research is trying to determine the level of study orientation skills among group achievers and its correlation towards the academic performance of UMP undergraduates. The research used new and more complete SOS devices comprising of a website for measurement and remedial, textbook, DVD, and lectures in measuring students SOS and method in re-correcting students SOS. Results from the research will show the UMP undergraduates score in their SOS and its relationship to their academic performance. These findings can be used to access and provide remedial devices to all university undergraduates in Malaysia either local or private universities, college or Polytechnics.

1.2 Research Objectives

The objectives to be achieved by the research are:

1. To develop devices in enhancing SOS among first year undergraduates.
2. To classify the SOS group achievers based on study orientation skills measurement.
3. To determine the effectiveness of the devices in improving students' study orientation skills.
4. To determine the effectiveness of the remedial devices in improving study orientation skills in relation towards their academic performance.

1.3 Research Hypotheses

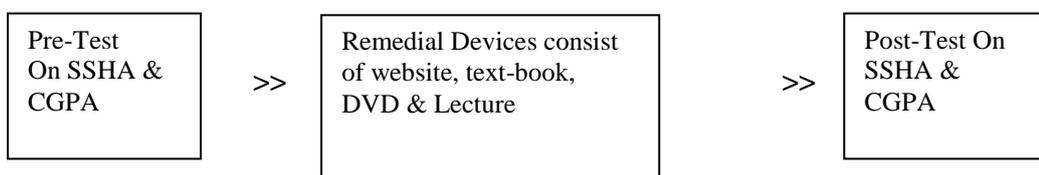
Below are the null hypotheses to be answered by the research finding:

1. There is no significant difference between pre-test and post-test of study orientation skills among Civil Engineering respondents.
2. There is no significant difference between pre-test and post-test on grade point Average of Civil Engineering respondents.
3. There is no correlation between study orientation skills and academic performance among Civil Engineering respondents

1.4 Methodology

1.4.1 Conceptual Framework

The conceptual framework for this research is as illustrated in the following chart as:



1.5 Research Process

This research is using pre-test and post-test with remedial devices with two different groups of engineering undergraduates comparatively. Pre-test was given to the respondents after two weeks they resumed their study in their second semester. The assessment on SOS is measured and the GPA score for the first semester results is obtained. Post-test is given after both groups of respondents received their second semester results. The assessment on SOS and GPA is once again calculated as sources of data. Analysis of data by percentage scores, mean scores and ANOVA was determined to find out the significant difference at p-values of 0.05 between pre-test and post-test scores on SOS and GPA within the groups and in between the groups. The correlation test using Spearman – Brown formula was tested to find out the correlation within and between the groups.

1.6 Results and Discussion

1.6.1 The measurement of Study Orientation Skills in pre-test and post-test based on group achievers among Civil engineering respondents

Pre-test result showed that the number of higher achiever group was 0%; normal achiever was 9 (15.25%) and under achiever was 50 (84.75%). Post-test results shows that there was an increase in the percentage value for the higher achiever group and normal achiever group; 3 (5.08%); 23 (38.98%) and decrease in the under achiever number to 33 (55.93%). All parameters of SOS such as DA (Means = 14.8 to 20.9), WM (16.1 to 23.1), TA (18.8 to 24.4), EA (20.3 to 24.4), SH (30.9 to 43.8) and SA (39.1 to 48.8) showed an increase in each means score. This result has shown that there was an increase in higher and normal achiever group as well as decrease in the percentage of under achiever after the respondents had received the remedial devices of study orientation skills. This means the respondents were successful in re-correcting their study orientation skills the website seems successful in measuring the value of study orientation skills among Civil engineering respondents into three group achievers.

1.6.3 The measurement of Study Orientation Skills in pre-test score between Civil Engineering Students and Computer Students

Table 3: The significant difference test score on study orientation skills between Civil engineering and Computer engineering respondents in pre-test.

<i>Groups (Factor)</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
Pre-test Civil	59	4130	70	522.8965517
Pre-test Computer	59	4950	83.89831	654.817066

ANOVA

Source of Variation	SS	do	MS	F	P-value	F crypt
Factor	5698.305	1	5698.305	9.676894279	0.002349	3.922878
Error	68307.39	116	588.8568			
Total	74005.69	117				

Reject Ho if Ftest > Fcrit (F_{0.05,1,116}) or P-value < 0.05

9.6769 > 3.9229 and 0.002349 < 0.05

So Reject Ho and accept H₁.

There was sufficient evidence to conclude that there was a difference in pre-test score between Civil Engineering at a significant level of 0.05 Table 3 shows that there was a significant difference of study orientation skills among Civil engineering students in the pre-test at P- Value 0-002349 < 0.05. Thus we accept Ha and reject Ho. But the difference in value is rather minimum when compared with the difference in mean score for Civil engineering respondents, which is 70 (variance 522.9) The result has shown that there was a difference among the respondents before the respondents who had undergone remedial devices of SOS.

1.6.4 The measurement of Study Orientation Skills in post-test score among Civil Engineering Students

Table 4: The significant difference test score on study orientation skills among Civil engineering respondents in post-test.

Groups (Factor)	Count	Sum	Average	Variance
Post-test AWAM	59	5463	92.59322	899.86616
Post-test COMPUTER	59	5837	98.9322	1172.20222

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	1185.39	1	1185.39	1.14416092	0.286996	3.922878
Within Groups	120180	116	1036.034			
Total	121365.4	117				

Reject Ho if Ftest > Fcrit (F_{0.05,1,116}) or P-value < 0.05

1.1442 < 3.9229 and 0.286996 > 0.05

So accept Ho and reject H₁.

There was sufficient evidence to conclude that there was no difference in post-test score for Civil Engineering Students at a significant level of 0.05 Table 4 above shows that there was no significant difference in post-test of study orientation skills score among Civil engineering in study orientation skills score at P – Value of 0.2869 > 0.05. Thus, we have to reject Ha and accept Ho. The mean score for Civil engineering respondents was 92.59 (variance 899.9). This result shows that after the remedial devices were given to both groups of respondents, there was a more or less similar increase in study orientation skills among Civil engineering. It shows that the remedial devices given to the respondents were effective and correct.

1.6.5 The measurement of Study Orientation Skills in pre-test and post-test on grade point average of Civil engineering respondents

Table 5: Significant difference between pre-test and post-test on grade point average of Civil engineering respondents

Groups (Factor)	Count	Sum	Average	Variance
Pre Test	59	162.32	2.751186	0.169683
Post Test	59	181.96	3.084068	0.105576

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	3.268895	1	3.268895	23.75138	3.51E-06	3.922878
Within Groups	15.96504	116	0.13763			
Total	19.23394	117				

Reject Ho if Ftest > Fcrit (F_{0.05,1,116}) or P-value < 0.05

23.75138 > 3.9229 and 3.51E-06 < 0.05

So Reject Ho and accept H₁.

The significant difference between pre-test and post-test on grade points average of civil engineering respondents.

Results from Table 5 showed that there was a significant difference on the score of grade points average between pre-test and post-test for the Civil engineering respondents.

P-value is $23.75 > 3.92$ at significant level of 0.05. Thus, we reject H_0 and accept H_a . Pre-test means was 2.75 (variance 0.17) and means for post test has increased to 3.08 (variance 0.11). The increase in means value was quite obvious between the pre-test and post-test. The results showed that the remedial devices given on SOS had an impact on the grade point average score or in the respondent's academic performance. This concurs with the findings of Bruce (2003); Cox (2001) and Carpenter (1990).

1.6.7 The correlation between study orientation skills and academic performance among civil engineering respondents.

Result shows that there was a weak positive correlation between study orientation skills and grade point average among Civil engineering respondents. The r Spearman Brown formula score is 0.2395. This value shows that the correlation between study orientation skills and grade point average score after the respondents received the remedial devices within the 6 months of interval. The strong correlation is determined by the value of $r > 8.0$. Weak positive correlation was sometimes found due to the sample size and the duration of the remedial devices used in correcting the respondents study orientation skills. The smaller the number of the sample will contribute to the smaller the value of correlation between SOS and GPA.

1.7 Discussion

These findings show that the remedial devices used in evaluating and intervention of the students study orientation skills was effective and correlated. The findings seem to support the past findings done by Wang (1993) who carried out a research in Hubei University and had indicated that students having a high score in SOS also excel in their academic performance. Neryla (2007) and Rhody (1993) also found that there was a strong correlation between SOS and the academic performance; He further quoted that a good score in SOS will also secure a good score in their CGPA. Generally all hypotheses tested in the research showed a positive result by rejecting H_0 and accepting H_a . Thus, all the tested hypotheses can be accepted and supports the past findings about measuring and re-correcting study orientation skills among undergraduates in institutions of higher learning.

The result shows that all the respondents from Civil engineering were positive in improving their SOS. Post-test and pre-test scores of all parameters of study orientation skills for both groups have also increased after the respondents received the remedial devices intervention. There was an increase in all parameters of study orientation skills including delay avoidance (DA), work methods (WM), teacher approval (TA) and educational acceptance (EA). Apparently an increase in means score has also occurred in student study habits (SH) and study attitudes (SA). Thus, there is a significantly difference in pre-test and post-test in study orientation scores. The result also shows that the groups of respondents have improved in their grade point average (GPA) score although the correlation between study orientation skills and grade point average was weakly positive. The weakly positive correlation may be due to the number of sample not being too big, (59 respondents) and the duration taken in giving the intervention was only for a period of six months only.

The significant difference test between pre-test and post-test of both group respondents also shows there were a significant difference between pre-test and post-test at the p value of 0.05. This results show that the remedial devices on SOS given to both groups respondents were effective. It is demonstrated by the increase in values of means score in post-test compared to the pre-test. Increasing in the mean scores between pre-test and post-test of both groups respondents also showed a significant difference in grade points (GPA) scores. Correlation test using r spearman brown formula of correlation coefficient shows that there was a weak positive correlation between SOS and GPA value in post test of respondents and respondents of Civil engineering. The weak correlation between SOS and GPA .found probably was due to the sample size (Navidi, 2006)

Conclusion and Practical Implications

It was found that the portal website was successful in measuring respondents study orientation skills and divided them into three groups of achievers such as higher achiever, normal achiever and under achiever. The results also showed there was an increase in mean scores from pre-test to post-test. The increase in the number of higher achiever and normal achiever as well as decrease in the number of under achiever for Civil engineering respondents showed that the SOS remedial devices were effective in inculcating SOS among respondents. And the intervention website was an effective device in inculcating SOS and re-correcting students fault in their study methods. With the help and guidance by the SOS text book or using DVD supplied then the respondents can easily go through the process of intervention to re-correct their study methods. The results above shows that the finding of this research is effective and will produce a new portal website in evaluating and re-correcting the undergraduates study orientation skills. The results also proved that with an increase in respondents study orientation skills it will also increase the respondent's academic performance.

These findings were supported by previous finding done by Isaak (2007); Judy and Nicholson (2003) and many more other research findings. The innovation and improvement done by this research through its portal website in accessing and providing remedial devices to the respondent's study orientation skills in short interval period of time and in a more convenient way.

The finding from this research can be practiced by undergraduates in public and private universities, Private colleges, polytechnics and MARA Colleges.

Research Product

1. Study orientation skills Portal
2. Study Orientation Skills in Action Textbook
3. Study Orientation Skills Kit
4. Study Orientation Skills DVDs
5. Ghani's format of note-taking

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