Class Schedule: A Predictor of Students' Performance in Computer Programming-1

Dr. Isidro L. Duran

Abstract - This paper aimed to determine the class schedules that predict performance of students in Computer Programming-1. Specifically it sought answers on determining the profile of students in terms of their class schedules and performance in Computer Programming-1 subject; the performance of the students in Computer Programming-1 with different class schedules; and the class schedules that predict performance of students Computer Programming-1. Simple experimental research design was employed in this study and the respondents were the students of the College of Computer Science who were selected purposively according to the class schedule arrangement of lecture and laboratory classes. This study found out that class schedule uses simple combinations. Time is accounted in the distribution on the lectures and laboratory class schedules. The means of the performance of the students are adjacent which are also close to the standard deviation. Lastly, it was found out that students perform better academically following the schedule: AM(Lec) – PM(Lab), Noon(Lec) – PM(Lab) and AM(Lab) – PM(Lec).

Index Terms - DMMMSU, Class Schedule, Predictor, Students' Performance, Computer Programming 1

1 INTRODUCTION

Researchers have proven that academic performance of students is affected by several factors. The academic performance of a student could be a good determinant on how well a student will handle himself when he is already graduated and performing his work related in the chosen field.

According to Baker (2004), time can be interpreted as a resource and, as such, the amount of time devoted to the education of student is often examined as a separate and central resource in the educational process. Despite its simplistic appearance, time in an educational setting is a complex issue. This is partially because the amount of time actually spent on instructional tasks and the efficiency of instruction are hard to determine—instructional time is dependent on its relationship to curriculum and instructional quality.

On the other hand the impact of class time lengths on student achievement appears to be a complex issue with no definitive answers. A major theme across many of the studies reviewed is that the amount of instructional time is not so important as how that time is spent (National Education Commission on Time and Learning, 2005).

But more time is not a silver bullet; alone, extended learning time is not enough to change educational outcomes because it must be accompanied by other practices, many of which are complex to implement (Pennington, 2006). However, supported by the implementation of research based-educational practices, extended learning time can be used effectively as a strategy for improving the performance and learning of disadvantaged and minority students.

One of the problems with instructional time is that education lacks a comprehensive national profile of the range and incidence of the policies and practices that describe in-school learning time (Kolbe, Partridge, & O'Reilly, 2011)

However, measuring of academic performance of students is challenging since student performance is a product of socio-economic, psychological and environmental factors. For the last 10 years, the College of Computer Science is growing in terms of population, even though still delivering high quality education that produces well-educated, skilled, mannered students according to needs and requirements of the dynamically growing market. Despite the fact of having limited facilities which made the administrators impoverished in scheduling of classes. Consequently, class schedule were made imperfect which students got confused and eventually the reason of distraction in their studies.

Hence, the scope of research is always there to find out what are the factors that affect the performance of the students. So, the researchers take the challenge to conduct a study on the effect of Class Schedule to Performance of Students.

1.1 Paradigm

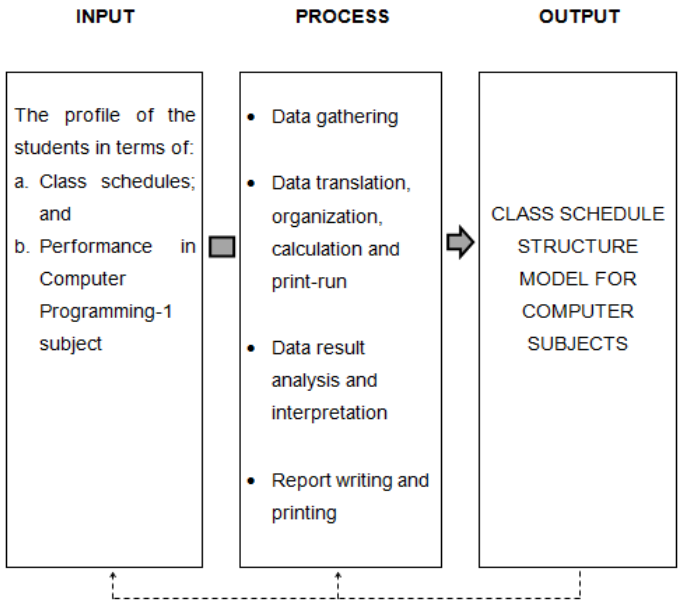

Figure 1: Paradigm of the study

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1.2 Statement of Objectives

This study sought answers the relationship between the class schedule and performance of students, specifically to answer the following questions:

1. What is the profile of the students in terms of:
   a. Class schedules; and
   b. Performance in Computer Programming-1?
2. What is the performance of the students in computer programming-1 subject with different class schedules?
3. What are the class schedules that predict performance of students in Computer Programming-1?

1.3 Hypothesis

H_o: There is no significant difference between class schedules and performance of students in computer programming-1.

2 METHOD

Simple experimental research design was employed in this study. One of the important features of an experimental research is that instead of simply measuring two variables, the researcher manipulates one of them. This means that the researcher can actually changes the content or structure of that variable in a systematic way. This variable, which is called the independent variable, is the one that the researcher believes is the cause. The other variable, which the researcher believes is the effect, is called the dependent variable**.** This design was applied on the effect of class schedule to performance of students in Programming-1 subject among the respondents of the study who were the students of the College of Computer Science particularly the freshmen students of SY 2011-2012 and SY 2012-2013. Respondents were selected purposively according to the class schedule arrangement of lecture and laboratory classes.

SPSS statistics application software was used to process gathered data. Descriptive statistics was employed to further describe the class schedules and performance of students (final grade). ANOVA on the other hand was used to test the significant difference among grades of students with different class schedules. Finally, post hoc test using Scheffe was applied to determine which one of the class schedules is a predictor to the performance of students in computer programming-1.

3 RESULTS AND DISCUSSION

3.1 The profile of the students in terms of:

a. Class Schedules

In the study of Stader (2001), a comparison was made between schools with block scheduling and with traditional schedules in Missouri. The teachers and the administrators were surveyed and the findings indicated that both group supports block scheduling and that they thought this type of scheduling improves school climate, and improves student achievement in some academic disciplines.

Moreover, DiLisi et al., 2006, examined the importance of establishing problem-solving habits in introductory science courses, considering traditional and block scheduling, its effect to the performance of students. They found that block scheduling prevailed over the traditional one.

The researchers considered the possible scheduling arrangement of subjects specifically Computer Programming-1 during regular semesters with respect to lectures and laboratory classes. "As the accountability bar rises, schools continue to explore avenues for increasing student achievement, and school leaders have examined alternative scheduling patterns" (Zepeda & Mayers, 2006).

Below is the designed class schedule structure.

LECTURE	LABORATORY	
AM	AM	
Noon	Noon	
PM	PM	
AM	Noon	
PM	Noon	
Noon	AM	Time Equivalence
Noon	PM	AM = 8:00 – 11:00
Am	PM	Noon = 11:00 – 2:00
PM	AM	PM = 2:00 – 5:00

According to Mowen and Mowen (2004), "student achievement should be the overriding factor" in a schedule structure. With this, the researchers designed a class schedule using simple combinations. These are how the lectures and laboratory classes were distributed to the different sections, wherein time is taken into account variably.

b. Performance in Computer Programming-1

Table 1: Means of students' performance on the different class schedules

	N	Mean	Std. Deviation
AM_lec_lab	32	82.4063	5.07276
Noon_lec_lab	32	82.1563	4.69804
PM_lec_lab	32	82.6875	5.17711
AM_lec_Noon_lab	32	83.4063	5.44687
AM_lab_Noon_lec	32	82.2500	5.16814
Noon_lec_PM_lab	32	78.6563	5.68875
Noon_lab_PM_lec	32	79.5000	6.02682
AM_lec_PM_lab	32	84.1875	4.09120
AM_lab_PM_lec	32	78.8438	3.90293
Average		81.5660	5.35914

The table revealed that the means of the performance of the students are close with each other which are also true to the standard deviation. However, the range of the grades is too distant. This is also supported by the interval for mean. In addition, the distribution is seemed to be normal for which the numbers of student's per-section are the same.

3.2 The performance of the students in computer programming-1 with different class schedules

Table 2: Test of significance among the performance of students in computer programming-1 in relation to their class schedules

	Sum of Squares	df	Mean Square	F-ratio	p-value	Decision
Between Groups	1061.903	8	132.738	5.157	.000	Significant
Within Groups	7180.844	279	25.738			
Total	8242.747	287				

Henebry (1997) found that there were no significant differences between the average grades of students, thus indicating that none of the scheduling formats appeared to be superior to the others in enhancing the academic performance of students.

Conversely, the result revealed significance, thus performances of the students in the different class schedules are significantly different.

3.3 Class schedules that predict performance of students in Computer Programming -1

Table 3: The class schedules which are significant at 0.05 level.

Class Schedules	Mean Difference	p-value	Decision
AM_lec_PM_lab	-5.53125*	.017	*Significant*
Noon_lec_PM_lab	5.53125*	.017	*Significant*
AM_lab_PM_lec	5.34375*	.026	*Significant*

Table 3, showed that students performed better academically as conveyed by the numeric values of mean difference and level of significance at 0.05. The lectures and laboratories are scheduled as follows: AM(Lec) – PM(Lab), Noon(Lec) – PM(Lab) and AM(Lab) –PM(Lec).

Result are also supported by Lawrence and McPherson (2000) who note the lack of scientific support regarding the effect of block scheduling on student academic achievement. This demand for research comes as a larger number of schools are adopting variations of block scheduling as opposed to the long standing traditional structure of the student's day. As encouraged by Lawrence & McPherson (2000), there is a growing need for, additional information for determining if block scheduling has an academic advantage over traditional scheduling.

Schedule structure proved to have a limited effect on AP exam scores in Calculus, English, and History. Schedule reform may not be the overall solution advocated by restructuring supporters. Schedule structures happen in a school context that involves multiple variables which can potentially affect AP exam scores. Analyses indicate a significant relationship between participation rate in the Biology and English exam and the percentage of the students qualifying for free/reduced lunch (Walsh, 2011).

4 CONCLUSION

Class schedule plays an important role in the performance of BSCS students in computer programming-1.

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