# OBSERVED CLASSROOM BEHAVIOUR AS PREDICTOR OF THE MAJOR EXAMINATION RESULTS IN ADVANCED STATISTICS OF BS INDUSTRIAL ENGINEERING STUDENTS

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## ABSTRACT

This study aimed to determine the result of the prelim and midterm examinations in Advanced Statistics of BS Industrial Engineering (BSIE) Fourth Year and how it was related to the observed classroom behaviour in terms of attendance during major examination, attendance during classes, attention, submission of exercises and assignment and their motivation. The BSIE 4 students obtained an excellent rating on attention and very satisfactory rating on motivation, submission of exercises and assignments as well as attendance during classes while attendance during Major examination obtained the least observed classroom behaviour. There is a significant relationship between the result of prelim examination and the observed classroom behaviour in terms of attendance during major exam, during classes, submission of exercises and motivation while all variables in the observed classroom behaviour are factors that determine the result of Midterm exam in Advanced Statistics of BSIE 4. Attendance during Major Exam is the best predictor among the selected variables of the Prelim Exam result and Motivation is the best predictor for the result of Midterm exam of the BSIE 4 in Advanced Statistics.


**Keywords:** Classroom Behaviour, Statistics, Industrial Engineering, Major Examination, Performance

**Introduction:**

Classroom behaviour is considered important factor in identifying some causes of academic related problems of the students. Behaviours can help to change a person's level of stimulation or mood (Bobrow, 2002). Most students exhibit appropriate behaviour in class, but sometimes there is disagreement over the definition of "appropriate" behaviour. This usually happens when students erroneously assume that faculty are employees hired to serve them (www.wiu.edu).

How the students behaved inside the classroom sometimes affect their performance due to their frequent absences and tardiness as well as their level of motivation to pursue their college education and interest towards the course. Teachers might consider the students' behaviour to explain the result of major examinations. Students who committed several absences sometimes are lacking of motivation and interest to get high grade in the subject like for example in the course under this study which is Advanced Statistics. Courses with schedule as early as 7:00 in the morning really suffer a lot for students who came to their first period always late due to several factors. But first and foremost of all those reasons is that they actually woke up very late to get in the class on time.

Coggin (2009) stated that most expert teachers have classrooms that are organized, clean, and accessible. Their procedures are well defined, visible, and follow an established routine. These teachers have learned how to teach appropriate behaviour and procedures and to be proactive. Students need to know how things are to be done and why. The teaching of this characteristic is important (Wong, 2005).

Attention span can also be measured inside the classroom through the patience they exerted in long computations and analysis of results in Statistics. Students sometimes get bored and they feel like irritated until they finally submit their papers with incomplete solutions without discussion of results. On time submission of exercises and assignments indicates that students ensure that they finished their assignments before the class starts. But most of the time, students can't help but to copy the assignment of their classmates while the teacher is already inside the classroom.

Credé, Roch and Kieszczynka (2010) conducted a study on the Meta-Analytic Review of the Relationship of Class Attendance With Grades and Student Characteristics which they found out that these relationships make class attendance a better predictor of college grades than any other known predictor of academic performance. Schiming (2012) emphasized that one of the most common areas where classroom practices of individual faculty members differ is attendance policy. Some faculty require attendance. Some faculty members count attendance positively in grade determination while others count the lack of attendance against the student's grade. Inherently most faculty probably believe that attendance is important in student success but most of them can provide only anecdotal evidence to support the belief.

Monitoring the behaviour of the students inside the classroom frequently would provide better understanding of their performance in a certain course. Given the data of the observation would define how good or bad they are in carrying out some tasks during discussions and seat works.

Student motivation is influenced by both internal and external factors that can start, sustain, intensify, or discourage behaviour (Reeve, 1996). Internal factors include the individual characteristics or dispositions that students bring to their learning, such as their interests, responsibility for learning, effort, values and perceived ability. It is also important to understand the external factors, which schools can affect--the variables in learning conditions and environment that trigger, support, or change student motivation. Certain types of schooling practices may promote or hinder motivation, such as features of the classrooms, peer groups, tasks, and instructional practices (Ainley, 2004). Teachers have a lot to do with their students' motivational level. A student may arrive in class with a certain degree of motivation. But the teacher's behaviour and teaching style, the structure of the course, the nature of the assignments and informal interactions with students all have a large effect on student motivation (Kirk, 2012).

Advanced statistics is a course in Industrial Engineering that requires a lot of patience, perseverance and analytical thinking to get the accurate information from their researched-based projects and activities. It is more on computation, analysis of data with several interpretations and discussions needed to justify the end result. Therefore, behaviour, attendance, attention span and motivation of the students were strictly monitored during classes to identify the areas needed by the students to improve to get better academic performance.

This study aimed to determine the result of the prelim and midterm examinations in Advanced Statistics of BS Industrial Engineering Fourth Year and how it was related to the observed classroom behaviour in terms of attendance during major examination, attendance during classes, attention, submission of exercises and assignment and their motivation.

Findings of the study would serve as baseline information for the teachers who will handle the same students during second semester of the same school year regarding their classroom behaviour. The predictor of two major examinations would guide both the students and the teachers on how they can work together to minimize the causes of untoward behaviours to achieve better performance.

**Objectives of the Study:**

This study aimed to determine the observed classroom behaviour of BS Industrial Engineering Fourth Year students enrolled in Advanced Statistics during SY 2012-2013 and how this behaviour could be related to their academic performance.

Specifically, this study was guided by the following objectives:

1. To determine the level of Classroom Behaviour of the respondents in terms of:
   1.1 Attendance during Major Examination;
   1.2 Attention;
   1.3 Attendance during classes;
   1.4 Submission of Exercises and Assignment; and
   1.5 Motivation.
2. To determine the Midterm Examination Result of Fourth Year BS Industrial Engineering students enrolled in Advanced Statistics during 1st Sem. SY 2012-2013.
3. To determine the relationship between the Midterm Examination Result in Advanced Statistics and the Classroom behaviour.
4. To determine which among the observed classroom behaviour variables best predicts the Prelim and Midterm Examination results.

**Method:**

This study used a descriptive method of research wherein the quantitative data were gathered using a documentary analysis of the prelim and midterm examination results of the BS Industrial Engineering students enrolled in Advanced Statistics during 1st Semester SY 2012-2013. Weighted mean, rank and linear regression analysis were the statistical treatments utilized in the study. Simple researcher-made questionnaire was used as an instrument to determine the classroom behaviour of the students in the course.

To interpret the result of the level of Classroom Behaviour of the BSIE 4 students, the researcher was offered five options. To arrive at a verbal description of each item, the arbitrary numerical guide was followed:

| Weight | Range | Descriptive Rating |
|---|---|---|
| 5 | 4.49 – 5.00 | Excellent |
| 4 | 3.50 – 4.49 | Very Satisfactory |
| 3 | 2.50 – 3.49 | Satisfactory |
| 2 | 1.50 – 2.49 | Fair |
| 1 | 1.00 – 1.49 | Poor |

**Results and Discussion**

Table 1 presents the level of classroom behaviour of the Fourth Year BS Industrial Engineering Student From Prelim to Midterm Period.

*Table 1*

*Level of Classroom Behaviour of the Fourth Year BS Industrial Engineering Student From Prelim to Midterm Period*

| Attention | WM | VI | Rank |
|---|---|---|---|
| 1. Has adequate attention span without signs of impatience | 5.00 | Excellent | 1 |

| | | | |
|---|---|---|---|
| 2. Listens attentively to classroom discussion and avoids unnecessary noise | 4.96 | Excellent | 2 |
| 3. Follows through on instructions properly | 4.74 | Excellent | 3 |
| **Composite Mean** | 4.90 | Excellent | |
| **Attendance** | | | |
| 1. Attends classes regularly | 3.83 | Very Satisfactory | 2 |
| 2. Attends classes on-time | 3.78 | Very Satisfactory | 3 |
| 3. Avoids unreasonable excuses. | 4.61 | Excellent | 1 |
| **Composite Mean** | 4.07 | Satisfactory | |
| **Submission** | | | |
| 1. Submits assignments and projects on-time | 4.13 | Very Satisfactory | 3 |
| 2. Completes exercises within class period | 4.48 | Very Satisfactory | 1 |
| 3. Presents satisfactory outputs of exercises | 4.39 | Very Satisfactory | 2 |
| **Composite Mean** | 4.33 | Very Satisfactory | |
| **Motivation** | | | |
| 1. Works patiently in classroom activities | 4.70 | Excellent | 1 |
| 2. Shows interest in the course | 4.22 | Very Satisfactory | 3 |
| 3. Demonstrates confidence at work | 4.35 | Very Satisfactory | 2 |
| **Composite Mean** | **4.42** | **Very Satisfactory** | |

Based on the observation of the teacher in the course Advanced Statistics, the students obtained an excellent rating because they have an adequate attention span without signs of impatience with weighted mean score of 5.00 followed by another excellent rating on listening attentively to classroom discussion and avoids unnecessary noise with 4.96 weighted mean score and they excellently follow through on instructions properly with 4.74 weighted mean score.

In terms of attendance, students have excellent rating for avoiding unreasonable excuses as manifested by the weighted mean score of 4.61 followed by very satisfactory rating on attending classes regularly with 3.83 weighted mean score as well as for attending classes on-time with 3.78.

Students obtained a very satisfactory rating in completing their exercise within class periods as denoted by the weighted mean score of 4.48 followed by presenting satisfactory outputs of exercises and submitting their assignments and projects on-time with weighted mean scores of 4.39 and 4.13, respectively.

In terms of motivation, they also obtained an excellent rating on working patiently n classroom activities as indicated by the weighted mean score of 4.70 followed by a very satisfactory rating in demonstrating confidence at work and showing interest in the course as manifested by the weighted mean scores of 4.35 and 4.22, respectively.

*Table 2*

*Summary of the Observed Classroom Behaviour From Prelim to Midterm Period Including Attendance during Major Exam*

| **Variables** | **WM** | **VI** | **Rank** |
|---|---|---|---|
| Attendance during Major Exam | 3.65 | Very Satisfactory | 5 |
| Attention | 4.90 | Excellent | 1 |
| Attendance during classes | 4.07 | Very Satisfactory | 4 |
| Submission of Exercises and Assignments | 4.33 | Very Satisfactory | 3 |
| Motivation | 4.42 | Very Satisfactory | 2 |
| **Overall Composite Mean** | 4.27 | Very Satisfactory | |

The students obtained an observed behaviour of excellent rating in attention as denoted by the composite mean score of 4.90 followed by a very satisfactory rating in motivation, submission of exercises and assignments as well as attendance during classes with weighted mean scores of 4.42, 4.33 and 4.07 on rank number 2, 3 and 4, respectively. Attendance during Major examination obtained the least observed classroom behaviour of the students with 3.65 weighted mean score and very satisfactory rating on rank number 5.

The computed overall composite mean score of 4.27 implies that the BS Industrial Engineering Fourth year students have very satisfactory classroom behaviour in Advanced

Statistics during Prelim and Midterm Period.

*Table 3*

*Midterm Examination Result of Fourth Year BS Industrial Engineering students enrolled in Advanced Statistics during 1st Sem. SY 2012-2013*

| | | Prelim | | Midterm | |
|---|---|---|---|---|---|
| **Range** | **VI** | **F** | **%** | **F** | **%** |
| 92 – 100 | Very Satisfactory | - | - | 4 | 20 |
| 84 – 91 | Satisfactory | 1 | 5 | 3 | 15 |
| 76 – 83 | Fair | 5 | 25 | 8 | 40 |
| 68 – 75 | Poor | 10 | 50 | 5 | 25 |
| 60 – 67 | Very Poor | 4 | 20 | 0 | 0 |
| **Average** | | **72.95 - Poor** | | **80.90 – Fair** | |

Half of the students obtained the Prelim examination result from 68 – 75 percent while 5 or 25 percent of them obtained Fair rating from 76 – 83 percent and 4 students or 20 percent have 60 – 67 percent exam result. One (1) student obtained a satisfactory performance rating from 84 – 91 percent.

During Midterm examination, most of the students with 8 or 40 percent of them obtained a fair rating from 76 – 83 percent followed by the poor performance of 5 or 25 percent of the students and 4 or 20 percent of them have 92 – 100 percent. Three (3) or 15 percent of the students obtained satisfactory rating from 84 – 91 percent.

The students obtained an average of 72.95 percent with poor performance rating during prelim examination while a fair performance rating of 80.90 percent was obtained during Midterm Exam.

*Table 4*

*Relationship between the Result of Prelim and Midterm Examinations in Advanced Statistics of Engineering Students and their Classroom Behaviour*

| **Variables** | **Prelim** | **Midterm** |
|---|---|---|

| | r-value | p-value | r-value | p-value |
|---|---|---|---|---|
| Attendance during Major Exam | 0.617(**) | 0.004 | .457(*) | .043 |
| Attention | 0.383 | 0.096 | .485(*) | .030 |
| Attendance during classes | 0.617(**) | 0.004 | .595(**) | .006 |
| Submission of Exercises and Assignments | 0.562(**) | 0.010 | .607(**) | .005 |
| Motivation | .0563(**) | 0.010 | .611(**) | .004 |

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

There is a significant relationship between the result of prelim examination and the observed classroom behaviour in terms of attendance during major exam, during class, submission of exercises and motivation with computed p-values of 0.004, 0.004, 0.010 and 0.010 which are less than the 0.05 level of significance, therefore the null hypothesis is rejected on these variables. This signifies that the higher the observed level of classroom behaviour of the students in terms of attendance, submission of exercises and motivation, there is also a tendency of obtaining higher result in prelim examination. This also implies that these mentioned variables are considered factors that determine the result of the prelim examination of BSIE 4 students in Advanced Statistics.

There is a significant relationship between the observed classroom behaviour and the result of their midterm examination as denoted by the p-values which are all less than 0.05 level of significance, therefore, the null hypothesis is rejected. This signifies that the classroom behaviour of the BSIE students are considered factor that determines the result of their Midterm exam in Advanced Statistics.

*Table 5*

*Observed Classroom Behavior as Predictor of the Advanced Statistics Prelim Examination Result*

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| 1 | .617(a) | .381 | .347 | 5.36485 |

a Predictors: (Constant), Att1

There is 38.1 percent guarantee wherein the researcher is confident that **"Attendance during Major Exam"** is the best predictor among the selected variables of the Prelim Exam result of the BSIE 4 in Advanced Statistics.

Table 6 reveals the observed classroom behaviour as predictor of the advanced statistics Midterm Examination Result.

*Table 6*

*Observed Classroom Behaviour as Predictor of the Advanced Statistics Midterm Examination Result*

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .611(a) | .373 | .338 | 5.44035 |

a Predictors: (Constant), Motivation

There is 37.3 percent guarantee wherein the researcher is confident that **"Motivation"** is the best predictor among the selected variables of the Midterm Exam result of the BSIE 4 in Advanced Statistics.

**Conclusion and Recommendation:**

The BSIE 4 students obtained an excellent rating on attention and very satisfactory rating on motivation, submission of exercises and assignments as well as attendance during classes while attendance during Major examination obtained the least observed classroom behaviour. The students obtained a poor performance rating during prelim examination while a fair performance rating was obtained by the BSIE 4 student in Advanced Statistics during Midterm Exam.

There is a significant relationship between the result of prelim examination and the observed classroom behaviour in terms of attendance during major exam, during classes,

submission of exercises and motivation while all variables in the observed classroom behaviour are factors that determine the result of Midterm exam in Advanced Statistics of BSIE 4. Attendance during Major Exam is the best predictor among the selected variables of the Prelim Exam result and Motivation is the best predictor for the result of Midterm exam of the BSIE 4 in Advanced Statistics.

Engineering students must be aware of their responsibility to arrive early or at least on time in school to prepare all the necessary things before the class starts and not to miss the preliminary discussions. They must learn how to use their vacant or spare time to finish their assignment and projects so that they could sleep on time at night and they could find it easy to wake up early in the morning.

Teachers must provide enough encouragement and motivation to students to strive harder to achieve higher grades in the subjects. They may establish a reward system that will recognize the students with exemplary performance during quizzes or major examinations to increase their motivation to exert more effort in dealing with their studies.

The Department Chair and Dean of the College of Engineering can provide seminars to the students to increase their interest towards the engineering program so that they could be motivated to excel in their chosen field of specialization.

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