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CASE STUDY ON ASSESSING STUDYING PATTERNS OF AERONAUTICAL ENGINEERING UNDERGRADUATES OF GENERAL SIR JOHN KOTELAWALA DEFENCE UNIVERSITY IN SRI LANKA

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ABSTRACT

Study patterns consider as one of the prominent factors in academic achievements. These studying patterns can be evaluated under several parameters such as regular study, study space, efficient in reading, listening to lectures, active participation for the lessons, doing homework, efficient writing of notes, preparation for exams and attending for exams. In this research, the sample consisted of all the undergraduates (29) studied in the Department of Aeronautical Engineering at their final year in 2015. The data related to studying patterns were collected using a self-administered questionnaire which includes 30 questions in the form of four point Likert. The objectives of this study were to evaluate the studying patterns of Aeronautical Engineering undergraduates who studied at their final year in the university and compare the influence of their studying patterns with their Academic class they obtained. A self-administered questionnaire was used to collect the data. Six studying pattern parameters were evaluated in this study. The Academic class achieved by the students who took part in this survey, were also considered for this study after they obtained their Final Grade Point Average (FGPA). The measured studying pattern parameters included reading text books, studying, memorizing, preparing for exams, time management and taking down notes. If the score relating to any study pattern

parameter increases, the overall study pattern also increases. When the total points gathered from all study pattern parameters is high, the overall study pattern of that particular student is also getting higher. As per the statistics this scale reported the high level of reliability (internal consistency) as 0.604. In this research, internal consistency of the scale was found as 0.564. Descriptive statistics method was applied at this stage in order to analyze the study pattern of the students. Based on the responses given by the responders, the frequency levels for each question was tabulated in MS Excel worksheet. The Excel worksheet was uploaded to the IBM Statistical Package for the Social Sciences (SPSS) software and each study pattern parameter was evaluated.

It was found that only 31.7 % of the studied group effectively practice the habit of reading text books and only 39.3 % effectively engage in studying. 33.8 % from the whole population practice effective memorizing methods while 56.6 % of students prepare for exams well in advance. Moreover, only 26.9 % of students practices effective time management practices but only 32.4 % of students were good in effective note writing skills. As these studying skills are inefficiently used by majority of the students only 7% of the students from the total were obtained First Class degrees

while the rest could get only general passes.

Keywords: Study patterns, Aeronautical Engineering, Undergraduates

INTRODUCTION

Researchers have recognized several factors of students which influence for their better performances in academic studies [1]. Some of these factors include students' perception about the teaching environment and the teaching strategies of the teacher [2]. One of the main reasons for student failures are due to inadequacy in the skills and attitudes towards their study [3]. Study patterns consider as one of the prominent factors in academic achievements [4, 5]. These studying patterns can be evaluated under several parameters such as regular study, study space, efficient in reading, listening to lectures, active participation for the lessons, doing homework, efficient writing of notes, preparation for exams and attending for exams [6, 7]. In addition, these efficient studying patterns can be explained under major three categories namely, motivation, time management and preparing for examinations [8]. Motivation plays a positive role in students' success academically by enabling them to manage time effectively. It was found that better time management skills lead to reach their goals at the end of the course [9]. Examinations plays an important role in the evaluation process of the students. Hence, effective studying strategies are vital to illustrate the real potential of the students [10]. As per the literature it is obvious that the contribution to enhance the students' effective studying patterns are mandatory in order to improve the university education system as a whole [2]. Further, there are many research articles where the researchers correlated the studying skills and academic

achievements [11]. The objectives of this study were to evaluate the studying patterns of aeronautical engineering undergraduates who studied at their final year and compare the influence of their studying patterns for their Academic class they obtained.

METHODOLOGY

In this research, the sample consisted of all the undergraduates (29) studied in the Department of Aeronautical Engineering at their final year in 2015. The data related to studying patterns were collected using a self-administered questionnaire which includes 30 questions in the form of four point Likert. The 30 questions were divided for 6 sections. Each section consists of five questions and those five questions were related to one specific studying pattern parameter. Hence, there were 6 studying pattern parameters and collectively they described the overall studying pattern of undergraduates.

Question No	Reading Text Books	Response
1	Browsing the headings, chapter questions before start reading a chapter	
2	Making questions based on the chapter what I read	
3	Clarifying the meaning of the new words when I am coming across while reading	
4	Looking for familiar concepts in the chapter	
5	Looking for the main ideas of the chapter	
	Studying	
6	Prefer to study in a quiet and calm environment with less distractions	
7	Prefer to study long hours while taking short breaks in between	
8	Keeping all the necessary stationeries with me, while I am studying	
9	Setting aims while studying such as no of pages read or no of problems solved	
10	Studying at least two hours per each day in addition to regular lecture hours	
	Memorizing	
11	Studying during my personal peak time of energy in order to maintain concentration towards studies	

12	Quizzing myself by predicting the subject matters which may tend to appear in future exams or quizzes		
13	Out loud the difficult concepts in order to understand them better		
14	Use my own terminology in my lecture notes		
15	Try to make a link between subject matters which I know already and what is new		
Preparing for exams			
16	Studying with a peers or with a group		
17	Getting help from lectures or friends to understand what I could not understand during the lecture		
18	Completing all the assignments on time		
19	Identifying what I know and what I don't know before I sit for the exam		
20	Predicting possible questions which could appear in the exam paper and getting ready with the answers		
Time management			
21	Note down upcoming academic activities		
22	Maintaining a "to do" list to keep track on academic work		
23	Readying for the upcoming exams well in advanced		
24	Initiate to work on assigned assignments or projects once they assign those		
25	Having enough time for fun activities		
Taking down notes			
26	Taking notes while I am reading text books		
27	Taking notes during lectures		
28	Rewrite the notes after the lecture		
29	Compare my lecture note with peer's notes to find out missed subject matters		
30	Organize the main ideas of the subject matters in a meaning way while writing the lecture note		
Likert scale	Never - 0	Rarely - 1	Sometimes - 2
			Often - 3

The Academic class achieved by the students who took part in this survey, were also considered for this study after they obtained their Final Grade Point Average (FGPA). The measured studying pattern parameters were such as Reading text books, Studying, Memorizing, Preparing for exams, Time management and Taking down notes. If the score relating to any studying pattern parameter increases, the overall studying pattern also increases. The total points gathered from all studying pattern parameters is higher implies that the overall studying pattern of that particular student is high. This scale reported the high level of reliability

(internal consistency) as .604. In this research, internal consistency of the scale was found as .564.

TABLE II

Cronbach's Alpha	Cronbach's Alpha based on standardized items	No of items
.564	.604	30

ERELIABI

Descriptive statistics method was applied at this stage in order to analyze the studying pattern of the students. Based on the responses given by the responders, the frequency levels for each question was tabulated in MS Excel worksheet. The Excel worksheet was uploaded to the IBM Statistical Package for the Social Sciences (SPSS) software and the each studying pattern parameter was evaluated.

RESULTS AND DISCUSSION

The generated results for each studying pattern parameters were tabularized and analyzed as follows.

A. Responses related for Reading text book

TABLE III

READING TEXT BOOKS

Question number	Frequencies				
	Valid	Frequency	Percent	Valid Percent	Cumulative Percent
1.1	0	-	-	-	-
	1	7	24.1	24.1	24.1
	2	17	58.6	58.6	82.8
	3	5	17.2	17.2	100.0
	Total	29			
1.2	0	1	3.4	3.4	3.4
	1	18	62.1	62.1	65.5
	2	8	27.6	27.6	93.1
	3	2	6.9	6.9	100.0
	Total	29			
1.3	0	-	-	-	-
	1	2	6.9	6.9	6.9
	2	11	37.9	37.9	44.8
	3	16	55.2	55.2	100.0
	Total	29			

1.4	0	-	-	-	-
	1	3	10.3	10.3	10.3
	2	14	48.3	48.3	58.6
	3	12	41.4	41.4	100.0
	Total	29			
1.5	0	1	3.4	3.4	3.4
	1	2	6.9	6.9	10.3

Question number	Frequencies				
	Valid	Frequency	Percent	Valid Percent	Cumulative Percent
2	15	51.7	51.7	62.1	
3	11	37.9	37.9	100.0	
Total	29				

Table III, represent the frequencies related to Reading Text Books of the selected sample. Out of 29 students in the sample, there are 7 students who rarely browse the headings, pictures and also the chapter questions before start reading the chapter and there are 17 students who do it sometimes. But there are 5 students, who browse the headings, pictures and chapter questions frequently prior to read the chapter. There is a student who never makes questions from the chapter and there are 18 students who rarely make questions from the read out chapter. Out of 29 students there are 8 students who make questions from the chapter sometimes in order to understand the content of the chapter properly, while there are 2 students who make questions frequently from the read out chapters. In addition, there are 2 students who rarely find out the meaning of new words while reading, where as there are 11 students who find out the meaning of new words sometimes. But there are 16 students who frequently find out the meaning of new words that they come across during reading. There are 3 students who rarely look for similar concepts that they knew already while reading the chapters and

there are 14 students who look for familiar concepts in the chapters sometimes. Out of 29 students there are 12 students who frequently look for familiar concepts while reading new chapters. Further, there is a student who never looks for main idea in the chapter but there are 2 students who look for main idea of the chapter rarely while reading. There are 15 students who look for main idea of the chapter sometimes and there are 11 students who try to grab the main frequently out of 29 students.

B. Responses related for Studying
TABLE IV

STUDYING

Question number	Frequencies				
	Valid	Frequency	Percent	Valid Percent	Cumulative Percent
2.1	0	1	3.4	3.4	3.4
	1	3	10.4	10.4	13.8
	2	13	44.8	44.8	58.6
	3	12	41.4	41.4	100.0
	Total	29			
2.2	0	1	3.4	3.4	3.4
	1	6	20.7	20.7	24.2

Question number	Frequencies				
	Valid	Frequency	Percent	Valid Percent	Cumulative Percent
2.3	2	9	31.0	31.0	55.2
	3	13	44.8	44.8	100.0
	Total	29			
	2.4	0	1	3.4	3.4
1		2	6.9	6.9	10.3
2		4	13.8	13.8	24.1
3		22	75.9	75.9	100.0
Total		29			
2.5	0	1	3.4	3.4	3.4
	1	6	20.7	20.7	24.2
	2	17	58.6	58.6	82.8
	3	5	17.2	17.2	100.0
	Total	29			

As per the data given in Table IV, an out of 29 students there is a student who do not concern about the calmness of the surrounding environment during studying. But 3 students rarely concern about the distractions during studying and there are 13 students who concern about the quietness of the environment sometimes while studying, as well there are 12 students who often concern about the quietness and less distractions of the studying environment. Furthermore, there is a student who studies continuously for lengthy hours with no breaks and there are 6 students who rarely take short breaks during lengthy studying hours. There are 9 students who take short breaks sometimes during lengthy hours of studying. Out of 29 students, 13 students frequently get short breaks during lengthy hours studying. Moreover, there is a student who does not bother about having stationeries during studying and 2 students are rarely concern about having stationeries while studying and there are 4 students who sometimes concern about the having stationeries with them during studying period. In addition, there are 22 students who frequently concern about having stationeries during studying period. Further, there is a single student who never set an aim regarding no of pages to be completed or no of questions to be solved prior to start studying but there 6 students who set aims rarely regarding no of pages to be completed or no of questions to be solved. There are 17 students who set aims sometimes and also there are 5 students who often set aims for no of pages to be completed or no of questions to be completed prior to start studying. Also, there is a student who never studies at least two hours per day in addition to the regular lectures, but there are 9 students who rarely study at least two hours per day in addition to the regular lecture hours. Moreover, there are 14 students who study at least two hours per day sometimes and also there are 5 students who frequently

study at least two hours per day in addition to the regular lecture series.

B. Responses related for Memorizing
TABLE V

MEMORIZING

Question number	Frequencies				
	Valid	Frequency	Percent	Valid Percent	Cumulative Percent
3.1	0	-	-	-	-
	1	4	13.8	13.8	13.8
	2	20	69.0	69.0	82.8
	3	5	17.2	17.2	100.0
	Total	29			
3.2	0	-	-	-	-
	1	6	20.7	20.7	20.7
	2	19	65.5	65.5	86.2
	3	4	13.8	13.8	100.0
	Total	29			
3.3	0	-	-	-	-
	1	5	17.2	17.2	17.2
	2	14	48.3	48.3	65.5
	3	10	34.5	34.5	100.0
	Total	29			
3.4	0	-	-	-	-
	1	3	10.3	10.3	10.3
	2	4	13.8	13.8	24.1
	3	22	75.9	75.9	100.0
	Total	29			
3.5	0	-	-	-	-
Question number	Frequencies				
	Valid	Frequency	Percent	Valid Percent	Cumulative Percent
3.5	1	6	20.7	20.7	20.7
	2	15	51.7	51.7	72.4
	3	8	27.6	27.6	100.0
	Total	29			

As given in Table V, there are 4 students, who rarely bother about their personal peak time of energy in order to maintain proper concentration level during studying. But there are 20 students who concern about their personal peak time of energy sometimes and try to study during that time. There are 5 students who often concern about their personal peak time of energy in order to memorize subject matters more effectively. There are 6 students who rarely quiz themselves regarding the possible subject matters which can appear in exam papers. In addition, there are 19 students who project quiz questions to themselves sometimes and the rest of 4 students who often project quiz to themselves which can appear in future exam papers. Additionally, there are 5 students who rarely out loud difficult concepts for better understanding while there are 14 students who out loud difficult concepts sometimes in order to understand them effectively. In addition, there are 10 students who frequently out loud difficult subject matters in order to understand them properly. Further, there are 3 students who use their own wordings in order to have a better lecture note while there are 4 students who use their own terminologies sometimes in their own lecture notes. But out of 29 students, 22 students use their own terminologies in their lecture notes for better understanding. Besides there are 6 students who rarely try to create an association between new subjects' matters and the subject matters they already know, while there are 15 students who try to create a link between subject matters sometimes. But there are 8 students who frequently try to create an association between new subject matters and subject matters they already know.

b Responses related for Preparing for exams
TABLE VI

PREPARING FOR EXAMS

Question number	Frequencies				
	Valid	Frequency	Percent	Valid Percent	Cumulative Percent
4.1	0	1	3.4	3.4	3.4
	1	5	17.2	17.2	20.7
	2	10	34.5	34.5	55.2
	3	13	44.8	44.8	100.0
	Total	29			
4.2	0	-	-	-	-
	1	2	6.9	6.9	6.9

Question number	Frequencies				
	Valid	Frequency	Percent	Valid Percent	Cumulative Percent
4.1	2	7	24.1	24.1	31.0
	3	20	69.0	69.0	100.0
	Total	29			
	0	-	-	-	-
4.3	1	3	10.3	10.3	10.3
	2	6	20.7	20.7	31.0
	3	20	69.0	69.0	100.0
	Total	29			
	0	-	-	-	-
4.4	1	1	3.4	3.4	3.4
	2	12	41.4	41.4	44.8
	3	16	55.2	55.2	100.0
	Total	29			
	0	-	-	-	-
4.5	1	1	3.4	3.4	3.4
	2	15	51.7	51.7	55.2
	3	13	44.8	44.8	100.0
	Total	29			
	0	-	-	-	-

As according to Table VI, there is a student who does only self-studies and there are 5 students who rarely study as a group with peers. Moreover, there are 10 students who study in a group sometimes and the rest 13 students study in a group frequently with peers. There are 2 students who rarely get the assistance from either

lecturers or friends to clarify difficult subject matters while 7 students are sometimes get the help from lectures or friends to clarify unclear subject matters and the rest 20 students are frequently get the help from lectures or friends to understand subject matters more. Besides, there are 3 students who rarely complete the assignment on time while there are 6 students who complete their assignment sometimes on time. But out of 29 students, there are 20 students who complete their assignments on time. Further, there is a student who never concern about what knows and what does not know in subject matters before taking the exam. But there are 12 students who concern about what knows and what do not know in subject matters sometimes prior to the exam and the rest 16 students are frequently concern about what knows and what do not know before they take the exam. In addition, there is a student who rarely anticipates the possible questions which could appear in the question paper and prepare with the answers while there are 15 students who anticipate the probable questions in exam paper sometimes and prepare with the answers. The rest 13 students are frequently anticipating the possible questions which could appear in the exam paper and get ready with the answers.

B Responses related for Time management
TABLE VII

TIME MANAGEMENT

Question number	Frequencies				
	Valid	Frequency	Percent	Valid Percent	Cumulative Percent
5.1	0	-	-	-	-
	1	20	69.0	69.0	69.0
	2	6	20.7	20.7	89.7
	3	3	10.3	10.3	100.0
	Total	29			
5.2	0	-	-	-	-
	1	11	37.9	37.9	37.9
	2	10	34.5	34.5	72.4
	3	8	27.6	27.6	100.0
	Total	29			

5.3	0	-	-	-	-
	1	6	20.7	20.7	20.7
	2	14	48.3	48.3	69.0
	3	9	31.0	31.0	100.0
	Total	29			
5.4	0	-	-	-	-
	1	7	24.1	24.1	24.1
	2	17	58.6	58.6	82.8
	3	5	17.2	17.2	100.0
	Total	29			
5.5	0	-	-	-	-
	1	5	17.2	17.2	17.2
	2	10	34.5	34.5	51.7

Question number	Frequencies				
	Valid	Frequency	Percent	Valid Percent	Cumulative Percent
3	14	48.3	48.3	48.3	100.0
Total	29				

As according to Table VII, there are 20 students who rarely note down upcoming academic activities while there are 6 students who note down the upcoming academic activities sometimes. In addition, there are 3 students who often write down upcoming academic activities. There are 11 students who rarely maintain a “to do” list to keep track on academic work, while there are 10 students sometimes use a “to do” list to keep tracks on those. There are 8 students who frequently use a “to do” list in order to keep record on academic work. Furthermore, there are 6 students who rarely start studying for the upcoming tests in well in advanced, while there are 14 students who start studying for upcoming tests sometimes in well in advanced. Out of 29 students only 9 students frequently get ready for the upcoming tests in advanced. There are 7 students who rarely start assignments or projects once they

have assigned while there are 17 students who sometimes start assignments or projects just after they have assigned those. Besides, there are 5 students who often start the assignments or projects once they assigned those. Furthermore, 5 students responded that they rarely get time for fun while another 10 students sometimes get time for fun. But there are 14 students who get time for fun frequently.

B Responses related for Taking down notes

TABLE VI II

TAKING DOWN NOTES

Question number	Frequencies				
	Valid	Frequency	Percent	Valid Percent	Cumulative Percent
6.1	0	-	-	-	-
	1	6	20.7	20.7	20.7
	2	13	44.8	44.8	65.5
	3	10	34.5	34.5	100.0
	Total	29			
6.2	0	-	-	-	-
	1	3	10.3	10.3	10.3
	2	17	58.6	58.7	69.0
	3	9	31.0	31.0	100.0

Question number	Frequencies				
	Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Total	29				
6.3	0	-	-	-	-
	1	13	44.8	44.8	44.8
	2	8	27.6	27.6	72.4
	3	8	27.6	27.6	100.0
	Total	29			
6.4	0	1	3.4	3.4	3.4
	1	10	34.5	34.6	38.0
	2	11	37.9	37.9	75.9
	3	7	24.1	24.1	100.0
	Total	29			
6.5	0	-	-	-	-
	1	3	10.4	10.4	10.4
	2	13	44.8	44.8	55.2
	3	13	44.8	44.8	100.0
	Total	29			

As given in Table VIII, there are 6 students who rarely taking down notes while they are reading text books and 13 students responded that sometimes they are taking down notes while reading the text books. Out of 29 students, 10 students responded that they use to taking down notes frequently, when they read text books. In addition, there are 3 students who rarely taking notes during lectures and there are 17 students who use to taking down notes at the lecture. But there are 9 students who frequently write down notes when they are in the lecture. Moreover, there are 13 students who rarely rewrite their notes after the lecture and there are 8 students in each category where they rewrite their lecture notes sometimes and more often. Besides, there is a student who never compares the lecture notes with peer's notes to find out missed subject matters, while there are 10 students who do so rarely. But there are 11 students who compare their lecture notes with peers sometimes and there are 7 students who compare their lecture notes with peers more often in order to have a complete lecture note. Furthermore, there are 3 students who rarely organize the main ideas of the subject matters in a meaningful way while writing the lecture note. But there are 13 students in each category where they organize the main ideas of the subject matters in a meaningful way while writing the lecture note sometimes and more frequently.

B. Responses related for achieved Academic Class

TABLE IX

TOTAL AVERAGE OF THE EACH MAXIMUM RESPONDERS PERCENTAGE FOR EACH TESTED STUDYING PATTERN PARAMETER

Studying pattern parameter	No of respondents	Total Average of the each Maximum responders percentage
Reading text books	29	31.7
Studying	29	39.3
Memorizing	29	33.8
Preparing for exams	29	56.6
Time management	29	26.9
Taking down notes	29	32.4

As according to the Table IX, only 31.7 % of the responders practices Reading text books and only 39.3 % practice effective studying methods. Besides, only 33.8 % of the respondents use effective memorizing techniques while only 56.6 % prepare for exams in an effective way. Proper time management techniques practice by 26.9 % from the studied group and only 32.4 % of students taking down notes in effective manner.

C. Responses related for achieved Academic Class

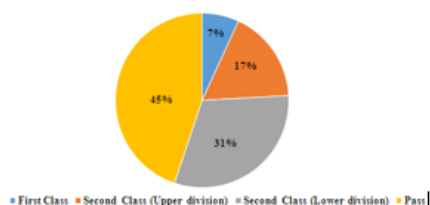


Fig. 1. Academic Class achieved by the responders

As shown in Fig.1, from the studied group of students only 7 % could obtained First Class and only 17 % of students could obtained Second Class (Upper division) as their academic achievements. Further, 31 % of the students from this sample could achieved Second Class (Lower division) while the rest 45 % of students could achieved Pass as their academic performances.

CONCLUSIONS

Based on the results of this study, it is clear that only 31.7 % from the studied group had followed most effective studying pattern in Reading text books while only 39.3 % from the studied group followed most effective study pattern for Studying. Out of the whole population, only 33.8 % were used proper memorizing methods and only 56.6 % of students followed most effective methods when it comes for preparing for exams. But from the studied group only 7 % could achieved

First Class while another 17 % could achieved Second Class (Upper division). The most effective time management techniques were followed only by 26.9 % of the students and only 32.4 % were effectively take down notes. Hence, 31 % from the studied group could obtained Second Class (Lower division). The studied group of students were practicing ineffective studying patterns which led them to obtained lower grades. Hence, the majority of the students could obtain Pass grade as their final academic achievement. The poor academic performances of the students coincide due to practicing of ineffective studying patterns. Hence, it is important to encourage students to practice most effective studying pattern in order to obtain highest academic performances.

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