

## Technique Mastery of Agricultural Mathematics Course through "Helpdesk" Method - A Pilot Study

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**Abstract:** The Mathematics Course is a subject commonly seen as a "killer subject" by most students. However, the percentage of graduation is not very satisfactory. Learning Mathematics is an essence in life. We need mathematics in our daily activities, it is part of our life. By looking into this aspect, this research is conducted to improve the performance of students in the Agriculture Mathematics course by recognizing and implementing counselling technique known as the "Helpdesk" technique to help the less-educated students in the Mathematical Agriculture course. This technique focuses on the mentor mentee concept among "senior" students to guide "junior" students. A total of 14 students were supervised and monitored. The results before the final and final examinations according to a particular topic are taken into account and analyzed using the Wilcoxon test to determine the effectiveness of the program. The Mathematics Score course was obtained after the average guidance was higher than the Mathematical Agriculture score before the guidance ( $47 \pm SD10.579$ ). This simple method can be applied to all other courses by lecturers who teach at other institutions.

**Key words:** Mentor, Mentee, Program "Helpdesk"

### INTRODUCTION

An early study of the organization's mentoring system largely ignores the internal features of the mentoring program, which is the origin of concepts, goals, interests, practices and mentoring models inherent in society and organization [1-3]. For example, the term mentoring begins in the Greek period, mentor is defined as a parent who has a lot of experience and is credible while the mentee is a young person with little experience of life and needs guidance. Currently, the definition of mentoring has been strengthened when current management scholars make new interpretations that are general, integrated with various training methods, and adapted to various types of organizations operating in dynamic environments [4]. Mentoring is important not only in education [5-6] and counselling [7], but also in the areas of training and human resource development. According to this perspective, mentors are defined as counselors, counselors, tutors, coaches or sponsors [8-9] while mentee is also known as a protégé, who is a less knowledgeable person and experience or a student who needs guidance [10]. In the context of the organization, mentoring is seen as a method of training and planned education to develop the potential of a person or group of individuals with less knowledge,

skills and abilities to be able to perform a task and responsibility [5-6, 11-12].

### PROBLEM STATEMENT

First semester students are very weak in master Mathematics course. With that, guidance other than classroom instruction is needed to increase the mastery of the course. This study examines the "Personal" or "Group Coaching" method as an additional or alternative program to improve the achievement of the Mathematics Farm course.

### OBJECTIVES

This program is based on achieving several identified objectives. Among them:

- i. Improve student achievement in Mathematics subjects.
- ii. Encourage students to improve their achievement in final exams.
- iii. Train and form a "senior" student with the potential to become a leader, instructor and facilitator of teaching.
- iv. Building close relationships between "senior" and junior students

- v. Provide opportunities for students to get exclusively and comfortably from senior "students" aside from lecturers.

**SCOPE OF STUDY**

This research is conducted for student’s enhancement in Mathematical subject. The scope of this research is mainly for first semester Diploma students in Agro technology Programme at Polytechnic Sandakan Sabah by finding the topics and enhancing it by doing more exercises, practices and explains on the method used to obtain an answer.

**METHODOLOGY**

The "Helpdesk" program is run in groups that are set according to the set schedule and the teaching given in groups or individually. The Mentor-Mentee program is carried out on a weekly basis and one of the classes is chosen as a sample. The program is known as the DAQ

1A "Helpdesk" program where the number of mentee students in the counselling class does not exceed 20 students. All the hours of the class in the semester were matched by the spaciousness of the mentors to teach a course on that day.

The mentors are comprised of "senior" students from the second semester to the fifth semester where their achievement records in this course are satisfactory and have a coaching and mentoring attitude. Their appointment letter was issued through the head of the Department of Mathematics, Science and Computers. A timetable is released and distributed to all class academic advisors and lecturers' are informed about it as well as notification to students to attend the "Helpdesk" class. The program schedule is as in Table 1 and the implementation procedures are shown in Figure 1.

**Table 1:** Program Tentative

Time	8AM – 9AM	9AM – 10AM	10AM – 11AM	1PM – 2PM	2PM – 3PM	3PM – 4PM	4PM – 5PM
Day							
Monday <b>(Biology and Chemistry)</b>	JUSREANA	HAEZAH	SYAHERA				
Tuesday <b>(Mathematics)</b>	SALMAN	RAZLAN	RAFEDAH				
Wednesday <b>(Biology and Chemistry)</b>				RAFEDAH	ESWARAN	SALMAN	FITRIANI
Thursday <b>(Mathematics)</b>				IZAN		KAMRAM	
Friday							

This program is conducted in a "personal coaching" or by a group of two mentors. Each course and topic taught are recorded in the attendance booklet of Helpdesk Program and are reviewed once a week by program coordinators that consists of lecturers from the Mathematics, Science and Computer Department. Student achievement scores are taken into account before and after "coaching" by semester. A total of 14 students were supervised and monitored. The results before and after the final examinations according to a particular topic are taken into account and analysed using the Wilcoxon test to determine the effectiveness of the program. The comparison of these achievements is seen as the benchmark of the effectiveness of the "Helpdesk" program for a course.

**RESULTS AND DISCUSSION**

Throughout the program, the results of the "Agricultural Mathematics" graph is shown as in Figure 2, where the DAQ1A students showed positive results. A total of 14 students were given "Coaching" for the Mathematics of Agriculture course after being identified by their lecturers in the classroom. These students were given appropriate exposure and explanation so that they would understand the course through explanations and exercises conducted by mentors. The increase in gaps was between 17 and 54 marks .PB represent for before final examination and PA represent after final examination.

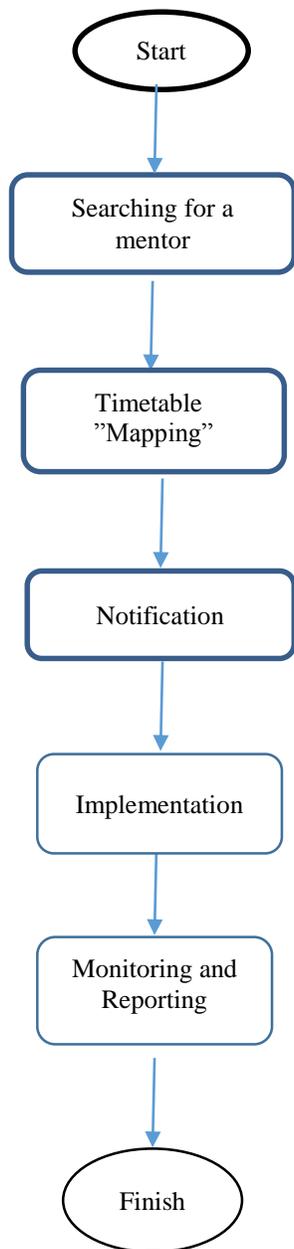


Figure 1: Flowchart of “HELPDESK” Program

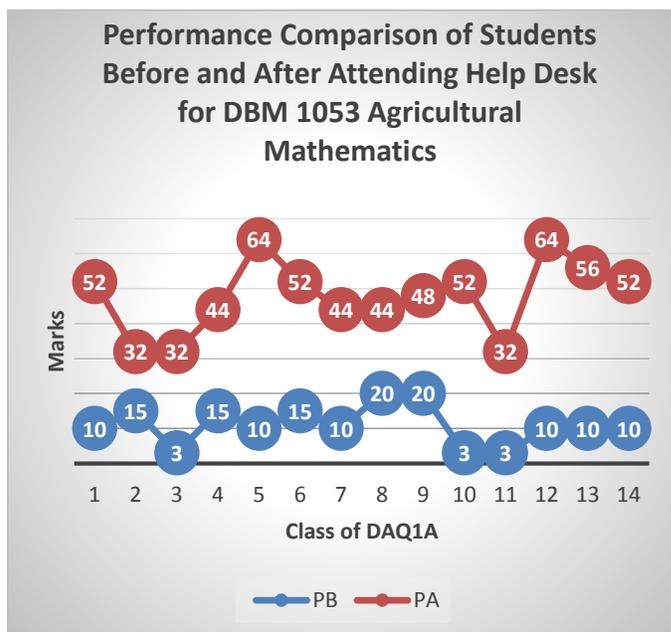


Figure 2: The Comparison of DAQ1A students’ results in "Agricultural Mathematics" before and after "Helpdesk" Program

According to the Wilcoxon Sign Rank Test results as in Table 2 and Table 3, it was found that the average scores of Mathematics of Agriculture course after guidance were significantly higher than the score of the Mathematical of Agriculture before guidance ( $47 \pm SD 10.579$ ), SD referred as standard deviation. Table 3 shows that all students showed the increase in the achievement of the course after attended the "helpdesk" program. The signed-rank Wilcoxon test shows that after the "helpdesk" program was implemented, the plane's score of the Mathematics Farming increased significantly ( $Z = -3.301, p = 0.001$ ) as shown in Table 4. All of this figures in table 2 and 3 indicates the improvement of this program.

### Descriptive Statistics

Table 2: Mean Score of Students with Standard Deviation before and after the "helpdesk" Program.

	N	Mean	Std. Deviation	Min	Max
MATH_SCORE BEFORE	14	11.00	5.602	3	20
MATH_SCORE AFTER	14	47.71	10.579	32	64

**Table 3:** Students' Achievement Rankings after attending the "Helpdesk" Program.

	N	Mean Rank	Sum Ranks
MATH_SCORE_ AFTER - Negative Ranks	0 <sup>a</sup>	.00	.00
MATH_SCORE_ BEFORE Positive Ranks	14 <sup>b</sup>	7.50	105.00
Ties	0 <sup>c</sup>		
Total	14		

a. MATH\_SCORE\_AFTER < MATH\_SCORE\_BEFORE

b. MATH\_SCORE\_AFTER > MATH\_SCORE\_BEFORE

c. MATH\_SCORE\_AFTER = MATH\_SCORE\_BEFORE

**Table 4:** Signed-ranked Wilcoxon Test shows significant increase the score of Mathematics among students after attended a "Helpdesk" Program.

**Test Statistics<sup>b</sup>**

	MATH_SCORE_AFTER - MATH_SCORE_BEFORE
Z	-3.301 <sup>a</sup>
Asymp. Sig. (2-tailed)	.001 <sup>b</sup>
	a. Based on negative ranks. b. Wilcoxon Signed Ranks Test

**CONCLUSION**

The "Helpdesk" program organized by the Department of Mathematical Science and Computer, Polytechnic Sandakan Sabah, which was held for the first time, has achieved the objectives as desired. Hopefully this kind of program can be implemented continuously in the future while the awareness of students' interest towards learning must be instilled and monitored by all lecturers. Although the number of students involved for coaching in this subject was in a small quantity according to the size given but the impact of its effectiveness was quite high. Various issues can be studied through this program where one of them is the achievement of continuous assessment is not a ticket to achieve better results in the final exam and vice versa. In the future the number of students for "Coaching and Mentoring" can be added and introduced to other subjects.

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