

## SURVEY ON THE ABILITY OF SECONDARY SCHOOL STUDENTS IN USING SCIENTIFIC CALCULATOR

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### ABSTRACT

*Scientific calculator, as one of the education technologies known to many students across countries, is said to give assistances in solving mathematical computation. As a user, the student should have known most of the instructions and functions in the scientific calculator for them to be able to benefit from the device. Data was collected from 56 secondary school students in Pulau Pinang who involved in mathematical seminar. In the seminar, some functions in scientific calculator related to their mathematics syllabus is integrated in solving mathematics questions. 30.4 percent of the students admitted that they did not have proficiency in using scientific calculator and 23 percent of them did not get direct teaching on most calculator functions from their teacher. The students agreed that by using the calculator it helped them in solving the computation quicker and they were more confident in their answer. There was 71.4 percent of students assured that they had improved their ability in using scientific calculator. This study suggests similar calculator seminar being trained to students occasionally as an initiative to support and maximise the use of scientific calculator in mathematics education.*

**Keywords:** Calculator scientific, mathematics education, school students

### Introduction

The scientific calculator is implemented in mathematics education as a learning aid used by teachers and students (Kamarulhaili & Sim, 2005; Leng, 2011). It is a valuable tool for gaining direct and stimulated experiences in learning mathematics. Incorporating such technology in mathematics education requires them to have the knowledge and ability to fully utilise it (Nabie & Yidana, 2001; Ebal et al., 2019). Students, as a generation that are growing up in a technologically environment, should feel comfortable exploring the functions of scientific calculator.

In Malaysia, most secondary school students especially form four and five students, should take at least one of two-mathematics subject called Modern Mathematics and Additional Mathematics. Both of these subjects consist of a handful topics the students have to master within two years. Excel in these subjects open opportunities for them to science and technology courses in their future university studies (Olson & Riordan, 2012; Sole, 2019). Consequently, it contributes to great pressure and loss of interest in learning mathematics when they face with difficulties in solving the questions. Proficiency in using scientific calculator surely come handy for the students to lift the burden in learning mathematics.

This paper, therefore, attempts to assess secondary school students on their knowledge and ability to use related functions in their scientific calculator. This is to prove that having the ability to use most of scientific calculator functions can save time in solving mathematical problems and improve students understanding.

### Methodology

In this study, data was taken from the participants of Seminar of Scientific Calculator organized by Department of Computer and Mathematical Sciences, University Teknologi MARA Cawangan Pulau Pinang. A total of 56 students from secondary schools (Form four students) throughout the state of Pulau Pinang participated in the seminar. The students came from four districts in Pulau Pinang, namely Seberang Perai Utara (SPU), Seberang Perai Tengah (SPT), Seberang Perai Selatan (SPS), and Barat Daya, where they attended public secondary schools. However, only 44 students completed the survey and the assessment. The survey consists of respondent's demographic and questions regarding their proficiency in using scientific calculator.

### Results and Discussion

Result from the survey and assessment are displayed and presented in tabulation and graphical presentation. Table 1 summarizes the demographics of the students. 34% of students attended schools in SPU, 32% attended SPT schools, 25% attended SPS schools and the remaining 9% attended Barat Daya schools. The majority of the students who participated in the seminar (84%) were female, with only 16% being male.

Table 1: The Summary of Students' Demographic

	SPU	SPT	SPS	Barat Daya	Total
Male	5	1	0	1	7
Female	9	14	11	3	37
Total	14	15	11	4	44

According to the results of a survey on students' experience with scientific calculators, as displayed in Figure 1, about 76.7% of students agreed and strongly agreed that their Mathematics teachers taught them how to use most of the basic functions in scientific calculators to solve mathematical problems. However, a small percentage of them, approximately 23%, disagreed.

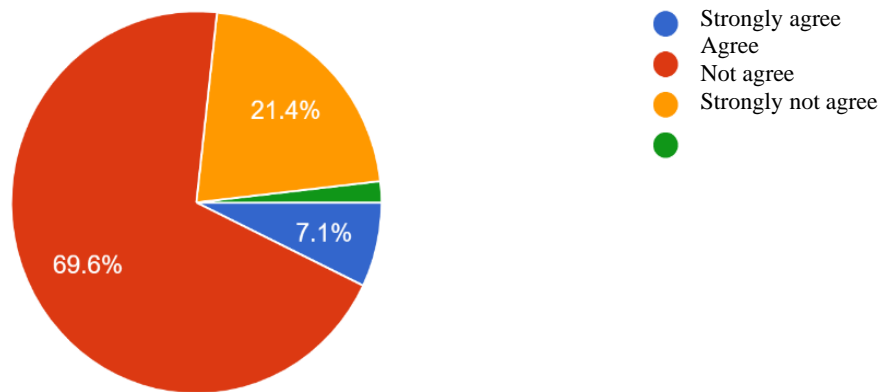


Figure 1: Teacher taught basic functions in scientific calculator

Following their teachers' lessons on using the scientific calculator (Figure 2), 69.6% of the students knew how to perform or use most of the basic functions in the scientific calculator when solving mathematical problems. Despite this, 30.4% of students responded that they were still not proficient in performing basic scientific calculator functions after receiving a lesson from their teachers at school.

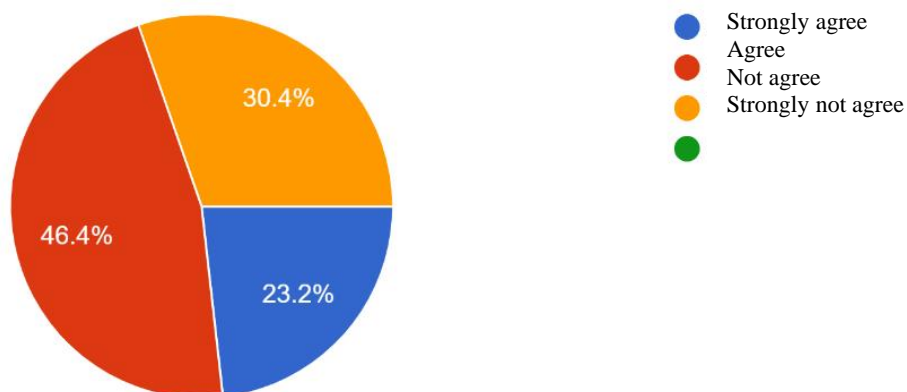


Figure 2: Students' knowledge in using scientific calculators

Figure 3 shows the survey results for the benefits of using a scientific calculator. All students with majority of them (71.4%) strongly agreed that a scientific calculator is an effective learning tool that

can assist them solve most mathematical problems in a short amount of time. With the aid of scientific calculator (Figure 4), all of them with 69.6% strongly agreed they felt more confident in their answers than when they solved the mathematical problems without using a scientific calculator.

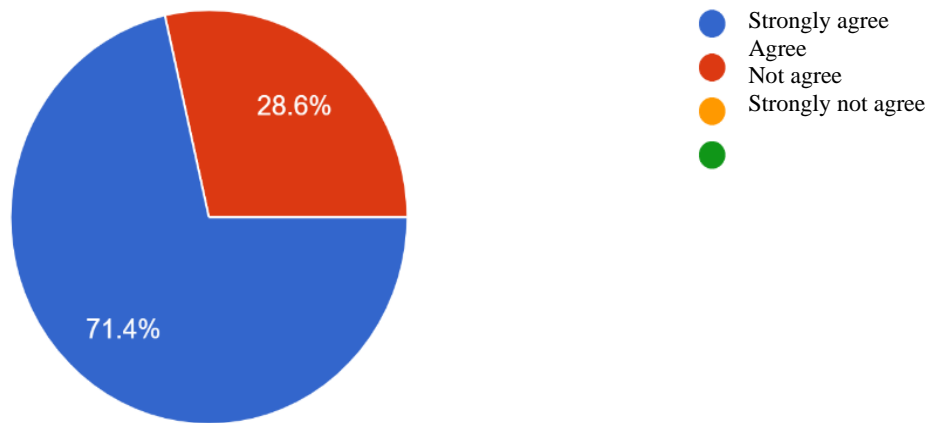


Figure 3: Scientific calculators save time in solving mathematical problems

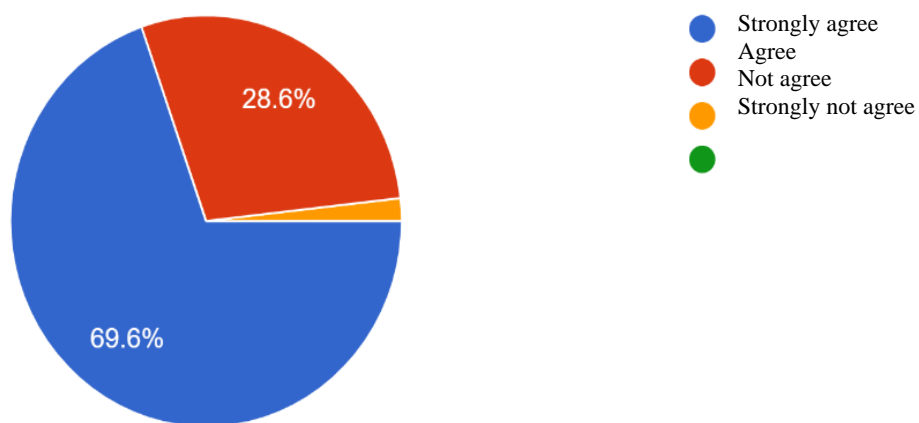


Figure 4: Students have confidence in their answer when using scientific calculators

### Conclusion

According to the findings, all students agreed that it improved their understanding of how to use a scientific calculator and that it is an effective learning tool that can help them solve most mathematical problems in a short amount of time. They also emphasised the importance of scientific calculator knowledge and competency for mathematics education. They felt more secure in their

responses when they used a scientific calculator to solve the mathematical problems than when they did not use a scientific calculator. As a result, the seminar's success has been recognised, and it is requested that it be held on a regular basis during their school years.

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