



The Extent Of Mobile Application Usage For Learning Mathematics Among Higher Secondary Students

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ABSTRACT

The integration of mobile technology into educational settings has revolutionized the way students engage with learning materials. This study investigates the extent to which mobile applications are utilized by mathematics higher secondary students for learning purposes. The extent of usage of mobile applications for learning mathematics among mathematics higher secondary students is influenced by factors such as convenience, interactivity, and personalized learning opportunities. While mobile applications offer numerous benefits for mathematics education. As technology continues to evolve, educators must remain vigilant in harnessing the benefits of mobile learning while mitigating potential risks, ensuring that all students have equitable access to quality mathematics education. The objectives of the study were: To find out the extent of usage of mobile apps for learning mathematics among mathematics students at higher secondary level is average. The investigator has followed random sampling method for the present study. The investigator has collected a sample of 450 higher secondary mathematics students studying in Madurai. The findings suggest a significant reliance on mobile applications for mathematics learning, with factors such as convenience, accessibility, and interactivity playing crucial roles in driving their adoption. Additionally, the study examines the types of mobile applications preferred by students, their perceived effectiveness, and the challenges encountered in utilizing them. Thus, the study reveals that, the extent of usage of mobile apps for learning mathematics among mathematics students at higher secondary level is average.

Keywords: Mobile applications, Mathematics education, Higher secondary students, Learning technology, Educational technology.

NEED FOR THE STUDY:

In today's rapidly evolving digital landscape, the integration of technology into education has become increasingly prevalent, revolutionizing traditional teaching and learning methods. Mathematics, as a cornerstone of education, is not exempt from this transformation. However, while the potential benefits of mobile applications for learning mathematics are evident, there is a pressing need to examine the extent to which mathematics higher secondary students utilize these resources. Mobile applications represent a significant component of this evolving landscape, offering new opportunities for teaching and learning. Investigating the extent of mobile application usage among mathematics higher secondary students can help educators and institutions adapt to these changes and stay abreast of emerging trends in education. Thus, the need to study the extent of usage of mobile applications for learning mathematics among mathematics higher secondary students is underscored by its potential impact on academic performance, its role in addressing diverse learning needs, its promotion of digital literacy, and its implications for educational policy and practice. By examining students' usage patterns and experiences with mobile applications, educators and policymakers can make informed decisions to enhance mathematics education and prepare students for success in a rapidly evolving digital world, so the investigator to explore under the title "The extent of mobile application usage for learning mathematics among higher secondary students".

TERMS AND DEFINITIONS:

- **Extent of usage:** It refers to the scope, encompasses factors such as the number of students using mobile applications, the frequency of usage, the types of activities performed within the applications.
- **Mobile application:** It allows users to explore functions, providing graphical capabilities and offer many kinds of specific calculators.
- **Learning:** It refers to knowledge gathering by higher secondary mathematics students.
- **Mathematics:** It refers to the science of structure, order and relation that has evolved from counting, measuring and describing the shapes of subjects.
- **Higher secondary students:** It refers to the level of senior secondary or 11th and 12th standards in 10+2+3 system of education in India.

OBJECTIVES OF THE STUDY:

The study has formulated the following objective:

1. To find out the level of usage of mobile apps for learning mathematics among mathematics students at higher secondary level is average.
2. To find out the extent of usage of mobile application for learning mathematics among mathematics students at higher secondary level is average.

HYPOTHESES OF THE STUDY:

1. The level of usage of mobile apps for learning mathematics among mathematics students at higher secondary level is average.
2. The extent of usage of mobile application for learning mathematics among mathematics students at higher secondary level is average.

INSTRUMENTATION:

The investigator developed and validated a rating scale on "Application of Mobile Apps for Learning Mathematics at Higher Secondary Level". The ratings were: Fully, To some extent, Not at all.

ESTABLISHING VALIDITY OF THE TOOL:

The investigator has consulted assistant professors in the department of education in Mannar Thirumalai Nayakkar College to check the content in the rating scale. The opinions of them were carried out in the tool. It ensures face and content validity of the inventory.

ESTABLISHING RELIABILITY OF THE TOOL:**TEST AND RETEST METHOD:**

The inventory was administered among 50 higher secondary school students in Madurai district as a try out and re-administered among the same 50 higher secondary students after a gap of 15 days. The rank order correlation was used to find out the correlation between first and second administration of the rating scale. The correlation between the two responses was 0.85. It is high Correlation. Hence it is assumed that it has reliability.

SCORING:

The number of responses for each item is counted and percentage worked out. For each student's ranking was given frequency and counted.

SAMPLE DESIGN:

The investigator has followed random sampling method for the present study. The investigator has collected a sample of 450 higher secondary students studying Madurai District.

ANALYSIS:**HYPOTHESIS:1**

The extent of usage of mobile application for learning mathematics among mathematics students at higher secondary level is average.

TABLE 1: DESCRIPTIVE ANALYSIS ON USAGE OF MOBILE APPLICATION FOR LEARNING MATHEMATICS AMONG MATHEMATICS STUDENTS AT HIGHER SECONDARY LEVEL

S.NO	MOBILE APPS	YES	NO
1	PHOTOMATH	99% (445)	1% (5)
2	MATHWAY	85% (383)	15% (67)
3	MICROSOFT MATH SOLVER	79% (357)	21% (79)
4	GEOMETRY SOLVER	76% (343)	21% (107)
5	MAPLE CALCULATOR	61% (275)	39% (175)
6	GRAPHING CALCULATOR	67% (302)	33% (148)
7.	CYMATH	66% (297)	34% (153)
8.	LEARNING APPS	54% (243)	46% (207)
9.	BYJUS	96% (432)	4% (18)
10.	CK-12	70% (316)	30% (134)
11.	GAUTHMATH	65% (293)	35% (157)
12.	NUMERADE	63% (284)	37% (166)
13.	CAMERA MATH	87% (394)	13% (56)
14.	A LEVEL MATHEMATICS	44% (198)	56% (252)
15.	SOCRATIC	47% (212)	53% (238)

It is evident from table 4.5 that the descriptive analysis of the extent of use of mobile apps among higher secondary student reveals that,

The higher secondary students 75%-100% are using the following mobile apps viz.,

1. Photo math 99%
2. Mathway 85%
3. Microsoft math solver 79%
4. Geometry solver 76%
5. Byju's 96%
6. Camera math 87%.

The higher secondary students 50%-75% are using the following mobile apps viz.,

1. Maple calculator 61%
2. Graphing calculator 67%
3. Cymath 66%
4. Learning Apps 54%
5. Gauthmath 65%
6. Numerade 63%.
7. CK-12 70%

The higher secondary students, below 50% are using the following mobile apps viz.,

1. A level of mathematics 44%
2. Socratic 47%.

It may be concluded from the above table that the order of using mobile apps for learning mathematics from high level to low level as stated by higher secondary students are as below,

1. Photo math
2. Mathway
3. Microsoft math solver
4. Geometry solver
5. Byju's
6. Camera math
7. Maple calculator
8. Graphing calculator
9. Cymath
10. Learning Apps
11. Gauthmath
12. Numerade
13. CK-12
14. A level of mathematics
15. Socratic

BAR DIAGRAM SHOWING USAGE OF MOBILE APPLICATION FOR LEARNING MATHEMATICS AMONG MATHEMATICS STUDENTS AT HIGHER SECONDARY LEVEL- DESCRIPTIVE ANALYSIS

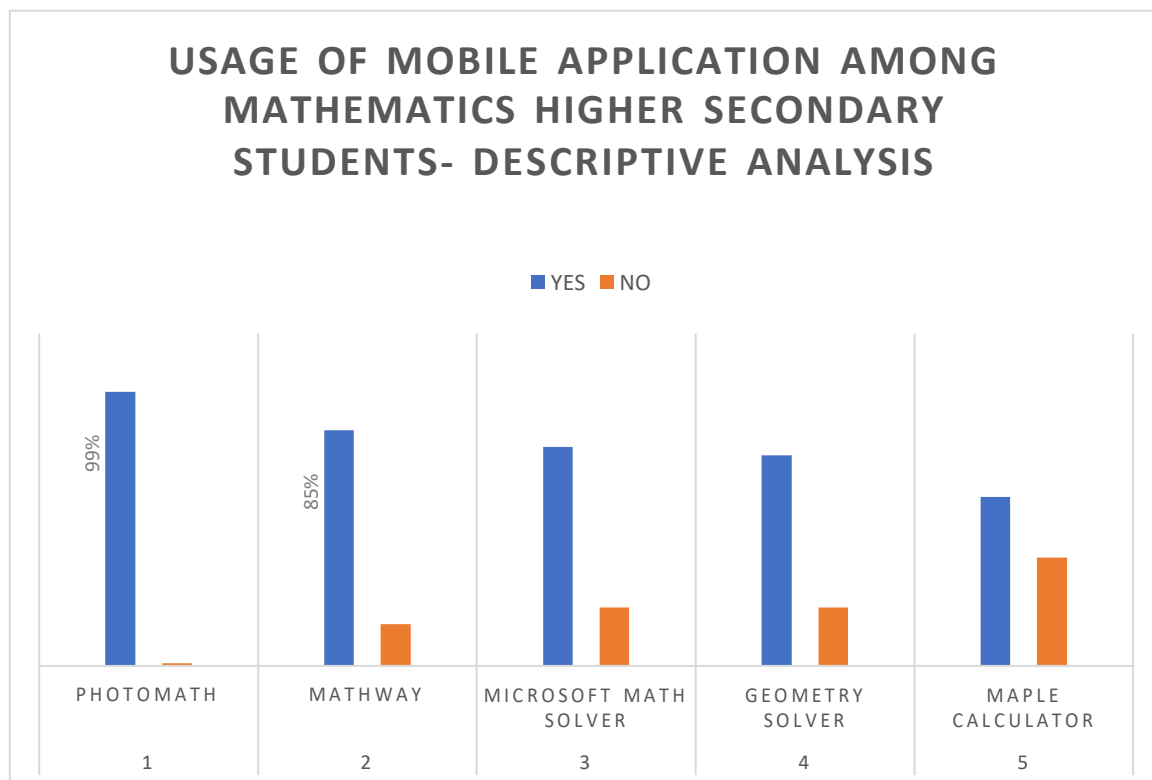
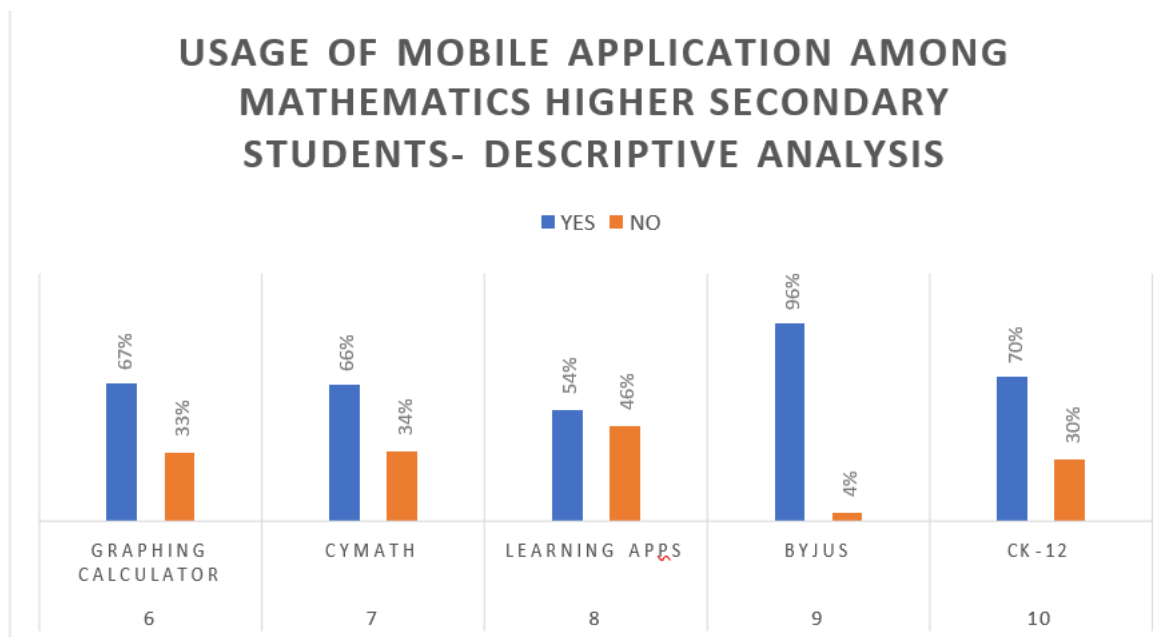
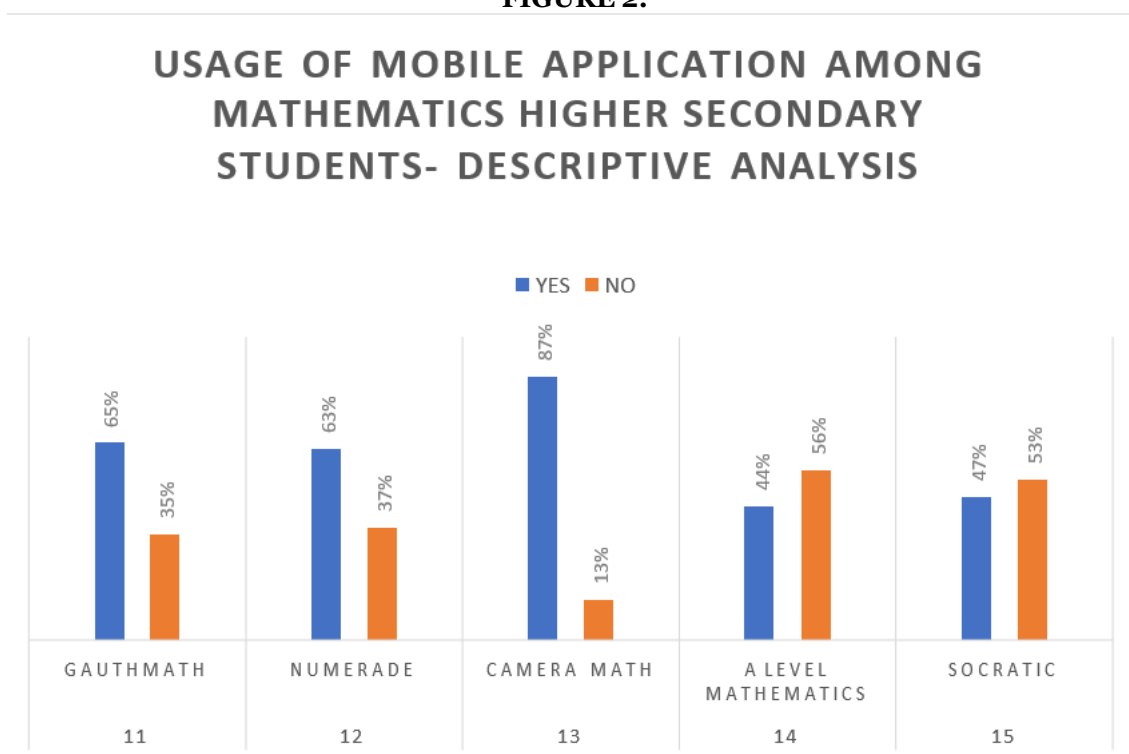


FIGURE 1:

**FIGURE 2:****FIGURE 3:**

DESCRIPTIVE ANALYSIS ON THE EXTENT OF USAGE OF MOBILE APPLICATION FOR LEARNING MATHEMATICS AMONG MATHEMATICS HIGHER SECONDARY STUDENTS

HYPOTHESIS 2

The extent of usage of mobile apps for learning mathematics among mathematics students at higher secondary level is average.

TABLE 2: DESCRIPTIVE ANALYSIS ON THE EXTENT OF USAGE OF MOBILE APPLICATION FOR LEARNING MATHEMATICS AMONG MATHEMATICS HIGHER SECONDARY STUDENTS

S.NO	MOBILE APPS	EXTENT OF USAGE OF MOBILE APPS FOR LEARNING
1	PHOTOMATH	1.76
2	MATHWAY	1.52
3	MICROSOFT MATH SOLVER	1.41
4	GEOMETRY SOLVER	1.37
5	MAPLE CALCULATOR	1.16
6	GRAPHING CALCULATOR	1.24
7	CYMATH	1.2
8	LEARNING APPS	1.06
9	BYJUS	1.71
10	CK-12	1.18
11	GAUTHMATH	0.95
12	NUMERADE	0.98
13	CAMERAMATH	1.57
14	A LEVEL MATHEMATICS	0.76
15	SOCRATIC	0.78

It is evident from table 4.6 that the descriptive analysis of the extent of usage of mobile apps among higher secondary student reveals that,

The higher secondary students are fully using the following mobile apps viz., 1. Photo math (1.76), 2. Mathway (1.52), 3. Byju's (1.71), 4. Camera math (1.57)

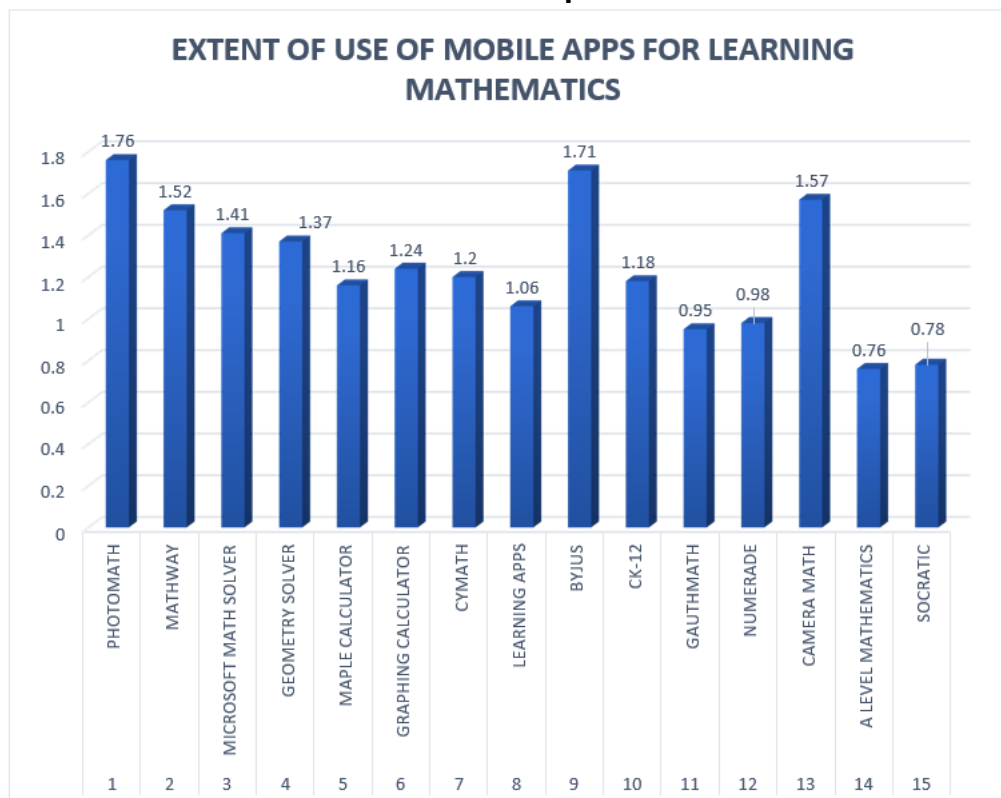
The higher secondary students are using the following mobile apps to some extent .viz., 1. Maple calculator (1.16) 2. Graphing calculator (1.24) 3. Cymath (1.2) 4. Learning Apps (1.06)

5. Gauthmath (0.95) 6. Numerade (0.98), 7. CK-12 (1.18), 8. Microsoft math solver (1.41), 9. Geometry solver (1.37), 10. A level of mathematics (0.76), 11. Socratic (0.78).

It may be concluded from the above table that the extent of usage of maximum number of mobile apps for learning mathematics among mathematics students at higher secondary level is average.

BAR DIAGRAM SHOWING THE EXTENT OF USE OF MOBILE APPLICATION FOR LEARNING AMONG HIGHER SECONDARY STUDENTS - DESCRIPTIVE ANALYSIS

FIGURE 4:



FINDINGS OF THE STUDY:

1. The study has revealed that the order of using mobile apps for learning mathematics from high level to

low level as stated by higher secondary students are as below,

1. Photo math
 2. Mathway
 3. Microsoft math solver
 4. Geometry solver
 5. Byju's
 6. Camera math
 7. Maple calculator
 8. Graphing calculator
 9. Cymath
 10. Learning Apps
 11. Gauthmath
 12. Numerade
 13. CK-12
 14. A level of mathematics
 15. Socratic
2. The extent of usage of maximum number of mobile apps for learning mathematics among mathematics students at higher secondary level is average.

CONCLUSION

This study contributes to our understanding of the extent of mobile application usage for learning mathematics among higher secondary students. The findings highlight the prevalence of mobile application usage, as well as its positive impact on student engagement, motivation, and learning outcomes.

EDUCATIONAL IMPLICATIONS

The implications of this study extend to educational practice, emphasizing the importance of integrating mobile applications into mathematics instruction to enhance student learning experiences and promote 21st-century skills.

BIBLIOGRAPHY

1. Johnson, L., Becker, S., Estrada, V., & Freeman, A. (2019). Mobile applications for mathematics learning: A systematic review. *Journal of Educational Technology & Society*, 22(1), 64-80.
2. Kukulska-Hulme, A., & Traxler, J. (Eds.). (2013). *Mobile learning: A handbook for educators and trainers*. Routledge.
3. Lee, M., & Park, S. (2019). Exploring the effectiveness of mobile applications in mathematics learning: A meta-analysis. *Computers & Education*, 133, 104-118.

WEB REFERENCES

1. <https://www.photomath.net/Photomath>. (n.d.). Retrieved on 13.05.2024.
2. <http://dx.doi.org/10.3991/ijim.v9i3.4420>, A Review of Mobile Learning Applications Mathematics retrieved on 13.05.2024