

RESEARCH AND REFLECTIONS ON EDUCATION

ISSN 0974-648X(P)

a peer reviewed and refereed quarterly journal

UGC-CARE Approved

Volume : 21 No : 03

Rs. 50/-

July - Sep 2023

ICT Impediments in the Performance of Teaching Professionals

Predictors of Quality of Work life among Teachers

Teacher Engagement in Higher Education Institutions

ICT facilities & Professional Development of Teacher Educators

Study Skills and Content Pedagogical Knowledge

Awareness on E-Teaching among Higher Secondary School Teachers

Effectiveness of E-Content

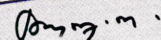
Gender Equality among Secondary School Teachers

Lateral Thinking and Achievement in Biology

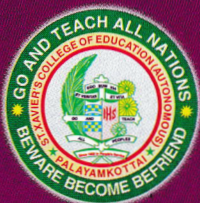
Teachers' Attitude towards functioning of CCE

Academic Emotions and Educational Aspirations

Mother Tongue as the medium of instruction



PRINCIPAL
ST. XAVIER'S COLLEGE OF EDUCATION
(AUTONOMOUS)
PALAYAMKOTTAI - 627 002.



St. Xavier's College of Education
(Autonomous)

[Re-accredited (4th Cycle) at 'A' Grade by NAAC]

PALAYAMKOTTAI - 627 002. TAMILNADU. INDIA.

Email: rresxce@gmail.com

Web: www.sxcejournal.com

Dear Readers!

Imagining a day without Information and Communication Technology (ICT) today is very hard as every person is using ICT in every aspect of his/her life. It has become a part and parcel of one's life which in turn makes a new lifestyle for much of the population. In addition, this lifestyle choice is changing the way of communication, consumerism, information gathering, interaction with parents and teachers. Moreover, the world is moving towards e-governance, e-health, e-education, e-commerce, e-banking, e-payment etc., With the amalgamation of ICT in educational sector, the traditional teaching and learning are changed into online and virtual environment. ICT can endow with universal access to education, helps in professional development of the teacher, the delivery of quality teaching-learning, equity in education, more efficient educational management, governance and administration. The increasing use of Information and Communication Technologies (ICTs) has revolutionized the teaching-learning process in the 21st century.

In this digital age, utilizing ICT Tools effectively in the teaching-learning process has become imperative, as the learners are digital natives. The teachers must habituate the use of multimedia presentations, educational software and online simulations in the classroom to create an active and collaborating learning experience for the students. By acquiring the vast information through ICT resources, teachers stay updated in their fields and reflect it in their teaching. In fact, the use of Learning Management System (LMS) and educational software to track students' progress, grading, attendance tracking, lesson planning and communication with students and parents, have enormous impact on the academic health as well as mental health of the learners. The latest techno-pedagogy and modern trends in educational research could be developed by attending online courses, seminars, and workshops. The tools of video conferencing and online collaboration facilitate collaborative research and teaching projects, expanding the horizons of empowerment of teachers. By incorporating ICT tools into teaching, teachers can prepare the students successfully for the digital challenges of the future, in their career. Softwares such as Interactive Geometry Software, Instructional Software, Simulation, Gaming and Recreational Software provides rich alternative sources for teaching and learning. They enable the students to remove fear and phobias related to study of a subject as it provides opportunities to learn while playing or engaging in virtual applications.

ICT helps in creating more inclusive learning environment by providing alternate forms of communication, access to digital resources in order to accommodate the students with special needs in the normal classroom. In a nutshell, we may say, ICT is a powerful tool which enhances the teaching methods of teachers which in turn improve the outcomes of the students. Hence the teachers need specific professional development programmes in order to increase their ability to use ICT for teaching, formative learning assessments, individualized instruction, accessing online resources, and for fostering student's interaction and collaboration. To support teachers, it is also essential for education managers, supervisors, and decision makers to be trained in use of ICT.

In this issue, twelve articles are published disseminating the findings of the research problems in various areas which will enlighten the readers. We do expect your comments on the quality of journal which will help us to grow further.

With Regards
Editorial Board.



RESEARCH AND REFLECTIONS ON EDUCATION (A Quarterly Journal)

Reg.No : TNENG / 2003 / 10220

ISSN : 0974-648X (P)

CONTENTS

ICT Impediments in Performing Roles and Responsibilities by Teaching Professionals in the Higher Education Institution	
Dr. Krutika Bhate, Dr. Avani Maniar	2
Predictors of Quality of Work Life among Teachers Working in the Higher Education Sector of Kerala	
Dr. Santhosh Areekkuzhiyil	5
Do Teacher Engagement in Higher Education Institutions Differ With Gender, Age, Designation, and Experience?	
G. Mary Sunanda, Raja Shekhar Bellamkonda	10
Sourya Rongala	10
Utilization of ICT Facilities and Professional Development of Teacher Educators	
A. Jasmine Agnal	14
A Study on Study Skills and Content Pedagogical Knowledge of B.Ed. Biological Science Students	
A. Arunachalam, Dr. C. Ramesh	17
Awareness on E-teaching among Higher Secondary School Teachers of Dindigul District in the Current Scenario	
Dr. S. Sampath Kumar	22
Effectiveness of E-content in Trigonometric Functions on the Achievement of Standard XI Students	
L. Mahesh, Dr. A. Michael J Leo	25
Gender Equality among Secondary School Teachers in Bankura District of West Bengal	
Dr. Sumit Paroi	28
Lateral Thinking and Achievement in Biology of XI Standard Students	
Dr. M. Vasimalairaja	30
Teachers' Attitude Towards Functioning of Continuous and Comprehensive Evaluation System among the High Schools in Tirupathur District	
Dr. R. Selvendiran	34
Academic Emotions and Educational Aspirations in High School Students	
Ayesha Armish Khan, D.r. Sayi Sravya	37
Dr. Nandini Sanyal, Dr. Swati Agarwal	37
Mother Tongue as the Medium of Instruction : towards Effective Implementation of Nep 2020	
Dr. Ritubakshi	45

PRINCIPAL
ST. XAVIER'S COLLEGE OF EDUCATION
(AUTONOMOUS)
PALAYAMKOTTAI-627002

EFFECTIVENESS OF E-CONTENT IN TRIGONOMETRIC FUNCTIONS ON THE ACHIEVEMENT OF STANDARD XI STUDENTS

Research
Paper

ABSTRACT

The aim of this study was to determine the effectiveness of the MiMa E-content Learning Module (MMELM) in trigonometric functions on the achievement of standard XI students. The two-group quasi-experimental design selected 30 students each in the control and experimental groups from Christian Matriculation School, Kallukootam, Kanyakumari District. The investigator developed and utilized the MMELM in trigonometric functions for standard XI students and the MiMa Achievement Test in Trigonometry (MATT). The design and development of the MMELM were based on the ADDIE instructional model. The experimental group students were given learning experiences on trigonometric functions by MMELM for a duration of 30 days. The study results showed that the standard XI students in the experimental group performed better in terms of post-test scores in MATT than their counterparts in the control group. Hence, the researcher concluded that the MMELM in trigonometric functions for standard XI students is significantly effective.

Keywords: Achievement, effectiveness, e-content, Trigonometric functions, module

Introduction

Education is normally thought to be the process of acquiring knowledge, developing skills, and understanding cognitive capabilities. People are identified by their capacity to learn, communicate, and reason (Bartlett & Burton, 2007). The powerful technological tools provide the capacity for communication academically and socially. E-content is one of the most vibrant mediums for communicating better in an academic environment. E-content is digital content transmitted over a computer network, such as the Internet. Products available in digital form typically refer to music, information, and images that are available for download or distribution on electronic media.

Electronic content is an inclusive term that describes educational technology that supports learning and teaching through electronic or technological means. Luskin (2002), a pioneer of e-content, advocates that the "e" should be interpreted to mean "exciting, energetic, enthusiastic, emotional, extended, excellent, and educational" in addition to "electronic". This broad interpretation focuses on new applications and developments while taking learning and media psychology into account. Parks (2007) suggested

that the "e" should refer to "everything, everyone, engaging, easy".

Rationale for the study

This study was significant for two major reasons. First, the study was inspired by the need to find an alternative approach to teaching Mathematics to improve students' performance. It attempted to determine an effective way of teaching and learning trigonometric functions. ICT is used as a mediating tool in the teaching and learning process. Secondly, only a few studies have dealt with evaluating the effectiveness of using ICT in the teaching and learning of trigonometric functions, although it has often been reported as a difficult topic for students. Since research on the use of ICT in the teaching of trigonometry in the classroom is sparse and quite limited, this study addresses that gap.

L. MAHESH

Research Scholar, St. Xavier's College of Education (Autonomous), Palayamkottai, Tamilnadu, India.

Dr. A. MICHAEL J LEO

Research Supervisor, St. Xavier's College of Education (Autonomous), Palayamkottai, Tamilnadu, India.

Objectives

1. To find out the level of achievement in trigonometric functions of control group standard XI students in their pre-test scores.
2. To find out the level of achievement in trigonometric functions of experimental group standard XI students in their pre-test scores.
3. To study the effectiveness of MMELMin trigonometric functions in the achievement of standard XI students.

Hypothesis

1. There is no significant difference between the control and experimental group of standard XI students in their post-test mean achievement scores in trigonometric Functions

Methodology

The experimental method was used in which the investigator chose the pre-test-post-test equivalent group quasi-design for experimentation. The developed design of MMEL Min trigonometric functions is based on the ADDIE instructional model.

Validation of Content: The selected content for the E-Content Learning Package was given to four experts belonging to the fields of Education and Mathematics for validation. After scrutiny of the content by the experts, diminutive changes were allowed. Also, the length of the content was minimized. Thus, content validation was established for the MMELM.

Validation of E-Content: The MMELM in trigonometric functions was given to three experts. As per their suggestions, various modifications, deletions, and inclusions were made to the e-content learning package. Again, this package, after eliminating the errors, was shown to the experts and the research supervisor for final approval.

Development and Validation of MiMa's Achievement Test in Trigonometry (MATT): MATT was developed and validated by the investigator and research supervisor in the year 2022. The investigator has framed 60 multiple-choice questions on trigonometry. By the process of item analysis with 50 XII-standard students of VKP Higher Secondary School, Colachel, Kanyakumari District, the difficulty level and discriminative index were identified for each item. The

final tool of MATT consisted of 40 items. The validated test, which has 40 items, is used for the pre-test and post-test.

Conducting the experiment: The duration of the experiment was 30 days at Christian Matriculation School, Kallukootam, Kanyakumari District. Students were divided into control and experimental groups after administering Cattell's Culture Fair Intelligence Test Scale III. A pre-test was conducted for both groups before starting the experiment. The control group students were taught by the traditional method and the experimental group students using MMELM. After completing the experiment, post-tests were conducted.

Analysis of Data

Objective 1: The level of achievement in trigonometric functions of control group standard XI students in their pre-test scores.

Table 1
Level of achievement in trigonometric functions of control group standard XI students in their pre-test scores

Objectives	Low		Moderate		High	
	N	%	N	%	N	%
Knowledge	11	36.7	17	56.7	2	6.7
Understanding	18	60	11	36.7	1	3.3
Application	28	93.3	1	3.3	1	3.3
Achievement in Total	5	16.7	12	40	13	43.3

It is inferred from the above table that, 36.75% of standard XI control group students showed a low level, 56.7% of them had moderate and 6.7% of them have high level of knowledge in their pre-test score. 60.0% of standard XI control group students showed a low level, 36.7% of them had moderate, and 3.3% of them have high level of understanding in their pre-test score. 93.3% of standard XI control group students showed low level, 3.3% of them had moderate and 3.3% of them have high level of application in their pre-test score. 16.7% of standard XI control group students showed low level, 40.0% of them had moderate, and 43.3% of them have high level of

Objective 2: The level of achievement in trigonometric functions of experimental group standard XI students in their pre-test scores.

Table 2

Level of achievement in trigonometric functions of experimental group standard XI students in their pre-test scores

Objectives	Low		Average		High	
	N	%	N	%	N	%
Knowledge	8	26.7	17	56.7	5	16.7
Understanding	18	60.0	7	23.3	5	16.7
Application	17	56.7	9	30.0	4	13.3
Achievement in Total	8	26.7	18	60.0	4	13.3

It is inferred from the above table that, 26.7% of standard XI experimental group students showed a low level, 56.7% of them have moderate and 16.7% of them have high level of knowledge in their pre-test score. 60.0% of standard XI experimental group students showed a low level of, 23.3% of them had moderate, and 16.7% of them have high level of understanding in their pre-test score. 56.7% of standard XI experimental group students showed a low level, 30.0% of them had moderate, and 13.3% of them have high level of application in their pre-test score. 26.7% of standard XI experimental group students showed low level, 60.0% of them had moderate and 13.3% of them have high-level of pre-test score in total.

Hypothesis 1: There is no significant difference between control and experimental group students in their Post-test mean achievement scores in Trigonometric Functions.

Table 3

Significant difference between control and experimental group students in their Post-test mean achievement scores in trigonometric functions

Objectives	Experi- mental Group(N=30)		Control Group (N=30)		Calcu- lated t- value	Calcu- lated p-value	Re- marks at 5% level
	Mean	S.D	Mean	S.D			
Knowledge	14.50	0.777	11.50	2.813	5.630	0.000*	S
Understanding	11.53	0.819	8.23	2.223	7.628	0.000*	S
Application	10.53	1.525	4.50	2.502	11.278	0.000*	S
Achievement in trigonometric functions	36.57	2.269	24.23	5.998	10.533	0.000*	S

*Significant at 5% Level S- Significant

It is inferred from the above table that the calculated P value of post-test scores is (0.000) and their attainment in knowledge, understanding, and application is less than the P value (0.05). Hence the null hypothesis is rejected. Therefore, there is a significant difference between the control and experimental groups of standard XI students in their post-test mean achievement scores in Trigonometric Functions. While comparing the mean scores of standard XI students of the Experimental group are better than the XI standard students of the control group students in their knowledge, understanding application, and achievement in total.

Findings and Interpretations

There is a significant difference between the control and experimental groups of standard XI students in their post-test mean achievement scores in trigonometric functions. The mean value of experimental group standard XI students is higher than the mean value of control group students. This may be due to the fact that e-content learning enhances self-management skills in the experimental group, so they significantly differ from the control group.

Conclusion

E-content development is at the heart of the teaching-learning process. It is the most modern method of instruction that has attracted the interest of learners and teachers of all kinds of instruction systems. The pertinent utilization of e-content in the teaching-learning process creates a significant impact on the learning of the students. Further, the e-content module on Trigonometric functions created a lot of scope for self-learning. The results of the study showed that there were significant differences in post-test scores between the experimental and control groups. Hence, the researcher concludes that the MMELM in trigonometric functions for standard XI students is significantly effective and a considerable contribution to the instructional techniques of teaching Mathematics.

References

1. Agarwal, Y. P. (2008). *Statistics of Education. (2nd Edition)* Delhi: Sterling Publications.
2. Bartlett, S., & Burton, D. (2007). *Introduction to Education Studies. London: Sage Publications.*
3. Luskin, B. J. (2002). *Casting the Net over Global Learning: New Developments in Workforce and Online Psychologies. Santa Ana, CA: Griffin Publishing.*
4. Parks, E. (2007). *What's the "e" in e-Learning?* Retrieved from <http://www.askinter national.com/knowledge/articles/eBasic/whatsElearn.html>.
5. Shaughnessy, J. J., & Zechmeister, E. B. (2006). *Research methods in psychology. New York: McGraw-Hill Publications.*
6. Vockell, E. L. (1983). *Educational research. New York: Macmillan Publishers.*



T
E
A
C
H
E
R
S

Teachers
Paint their minds
and guide their thoughts
Share their achievements
and advise their faults
Inspire a Love
of knowledge and truth
As you light the path
Which leads our youth
For our future brightens
with each lesson you teach
Each smile you lengthen
Each goal you help reach
For the dawn of each poet
each philosopher and king
Begins with a Teacher
And the wisdom they bring.



- Kevin William Huff

