THE KNOWLEDGE AND ATTITUDE OF TEACHERS TOWARDS THE IMPLEMENTATION OF MODERN TECHNOLOGIES IN SCHOOLS

A PROJECT PROPOSAL

Submitted to

THE GANDHIGRAM RURAL INSTITUTE (DEEMED TO BE UNIVERSITY)
GANDHIGRAM – 624 302, DINDIGUL DISTRICT, TAMILNADU
(Ministry of Human Resource Development, Government of India)
Accredited by NAAC with 'A' Grade (3rd Cycle)

Under the Scheme of
Pandit Madan Mohan Malaviya National Mission on
Teachers and Teaching (PMMMNMTT)
Department of Higher Education
Ministry of Human Resources and Development,
Government of India
New Delhi

Principal Investigator
Dr. M. ANTONY RAJ

Co-Principal Investigator
Dr. Y. DANIEL

Through
St. Xavier's College of Education (Autonomous)
(Re-accredited (3rd cycle) at "A" Grade by NAAC with CGPA: 3.67)
Palayamkottai – 627 002

Principal
St. Xavier's College of Education
(Autonomous)
Palayamkottai - 627 002

From

13-02-2019

Dr. M. Antony Raj
Principal Investigator
Dr. Y. Daniel
Co-Principal Investigator
Assistant Professors
St. Xavier's College of Education (Autonomous)
Palayamkottai – 627 002

To

Project Coordinator,
MHRD, School of Education under PMMMNMTT,
Department of Education,
The Gandhigram Rural Institute - (Deemed to be University)
Gandhigram- 624302, Tamil Nadu.

Respected Sir/Madam,

Sub: Applying for Minor Research Project on "The Knowledge and Attitude of Teachers towards the Implementation of Modern Technologies in Schools".

Ref: Your advertisement in the website www.ruraluniv.ac.in

St. Xavier's College of Education established in 1950 has set its mark of excellence in the educational map of India. Our college offers B. Ed., M. Ed., M. Phil., and Ph. D. in education. Being an autonomous institution since 2006, NAAC re-accredited our college with 'A' grade, with CGPA of 3.67 for a period of five years from 2012-'13 and has extended the validity of the given status to our college for two more years. The college has produced 390 M. Phil., and 112 Ph. D. scholars in education.

As per the information and guidelines available in the website, We are applying for a minor project entitled, "The Knowledge and Attitude of Teachers towards the Implementation of Modern Technologies in Schools" along with the necessary documents. Kindly consider and do the needful.

Thanking you

Yours faithfully,

Encl. Application form, Proposal and other relevant documents

Forwarded:

Principal

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

GANDHIGRAM RURAL INSTITUTE (Deemed to be University)

GANDHIGRAM – 624 302, DINDIGUL DISTRICT, TAMILNADU

(Ministry of Human Resource Development, Government of India)

Accredited by NAAC with 'A' Grade (3rd Cycle)

SCHOOL OF EDUCATION

Under the Scheme of PMMMNMTT

Application for Research Projects (Minor)

1	Name of Principal Investigator (PI)/ Co-Principal Investigator	Dr. M. Antony Raj (PI) Dr. Y. Daniel (Co-PI)
2	Present Position and Institutional Address of the organization of the Principal Investigator (telephone/mobile/Email id must be written clearly)	Director, Centre for Research &Assistant Professor (PI) St. Xavier's College of Education (Autonomous), Palayamkottai – 627002 Tirunelveli District, Tamilnadu Mobile No.94427 68855 Email-id: drmantonyraj@gmail.com
	Present Position and Institutional Address of the organization of the Co-Investigator (telephone/mobile/Email id must be written clearly)	Vice Principal & Asst. Prof (Co-PI) St. Xavier's College of Education (Autonomous), Palayamkottai – 627 002 Tirunelveli District, Tamilnadu Mobile No.98655 30409 Email-id: danilecturersxce@gmail.com
	Mailing Address	Dr. M. Antony Raj Director, Centre for Research (PI) St. Xavier's College of Education (Autonomous), Palayamkottai – 627 002 Tirunelveli District, Tamilnadu
3	Date of Birth and Age (PI & C PI)	07-05-1966 (PI) , 52 & 15-05-1979, 39
4	Gender	Male
5	Category to which the PI belongs: Enclose relevant certificates,(if any)	OBC

6	University/Institutes where the project would be located Give complete address.	St. Xavier's College of Education (Autonomous), Palayamkottai – 627 002 Tirunelveli District, Tamilnadu Phone no. 0462-2577630 Fax: 0462-2577631 Email:sxcbed@yahoo.com Website: www.sxcedn.edu.in
7	Type of Institution where the project will be located and administered	Government Aided (Autonomous) College
8	Educational Qualification and academic attainment of the PI& Co PI (Please enclose a brief academic CV as in annexure II)	Enclosed in Annexure II
9	Indicate if PI has received any Other Research grant previously from PMMMNMTT of other Institutions? Those scholars, who have ongoing Research Projects (Major/Minor and Research Programme) as Main Project Director need not apply (Please tick)	No
10.	If completed, specify (clearly mention the title of the study)	Nil
11	Title of the Project Proposal (Brief Abstract of the proposal in 1500 words as per Annexure 1)	Enclosed
12	Discipline(s) of the proposed Research Studies (Kindly indicate) (Refer general Guidelines 1.4)	Education (ICT)
13	Estimated Budget and duration of the study (Please provide detailed estimate of the budget in a separate sheet. Please follow the norms provided in the guidelines)	Budget (In Rs.) 5, 00000 Duration (in months) 12 months

DECLARATION

If any of the above information supplied by me is proved to be incorrect, my project may be cancelled.

Place : Palayamkottai

Date : 13-02-2019

Signature of the Principal Investigator

Signature of the Forwarding Authority

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

Co-Principal Investigator

Annexure-I

A. A concise Summary of the Research Proposal

Discipline of the Project: Education - ICT

Title: The Knowledge and Attitude of Teachers towards the Implementation of Modern Technologies in Schools

Aim of the Project: To acquire firsthand knowledge about the contextual pedagogic and attitudes among teachers' towards the implementation of modern technologies in teaching and learning process.

Statement of the Problem: At present the government of Tamil Nadu is introducing more new innovative technologies in schools and so it is essential to know the level of knowledge and attitude of teachers towards the implementation of modern technologies in Tamil nadu schools. This research would reveal the level of the knowledge and attitude of teachers towards the implementation of modern technologies and the relationship between them.

This would help the Tamil Nadu Government who wishes to train teachers in technology use, Teacher-training colleges, and school administrators wishing to introduce specific technologies into their schools or school systems, and other stakeholders in education to train teachers according to their knowledge level. This study is more important because when a new piece of technology is given by the government by all means it should know how comfortable a teacher is with technology as it will directly impact the integration of technology in their classroom.

Overview of Literature:

Allimuthu , N. & Muthupandi, P. (2017) found that there was significant difference in attitude towards ICT of B.Ed. trainees with reference to medium of instruction, browsing habit, internet connection at home.Lulu Sebastine (2018) revealed that there was significant difference between the attitude of boys and girls in higher secondary school students towards using Online Instructional Package.Thangamani, D. (2018) found that the attitude of .Ed. students towards ICT is moderate. Alabede Kasali Oketunde (2017) laid more emphasizes on the problems and prospects of ICT usage in colleges of education in Nigeria . The teacher education is robust with the integration of ICT for easy flexibility, and with wide range of ICT applications in education sector like online registration for both registration, screening for admission, lecture delivery, assignments posting, online payments and others related

works. This study is entirely different from the studies conducted earlier in terms of area and population

Conceptual Framework:

In the last strides of the twentieth century, both school education and society have witnessed bizarre hi-tech advancements. All these changes occurred in quick succession in school and society, coupled with new challenges to be faced in the initial decades of the twenty first century. Usage of informational technology has become a fundamental element of present life and indispensable instrument in most of the fields. Some teachers are happily raised to the challenges of information technology using computers and Internet, but many others for a variety of reasons are not able to do so.

In the 21st century, Information and Communication Technology (ICT) is providing teachers with new ways to access and process knowledge in the field of education. ICT is also transforming pedagogy by providing new ways to engage learners.

At present expert teachers now are those who can bring together knowledge of subject matter, what is good for learning, and technology (ICT). The combination is described as Technological Pedagogical Content Knowledge (TPACK). It is more than simply adding ICT to traditional approaches. It depends upon deep knowledge of how ICT can be used to access and process subject matter (TCK) and understanding how ICT can support and enhance learning (TPK) in combination with PCK.

The expertise embodied in the TPACK of a teacher is different from the knowledge of a discipline expert, a technologist, or an expert on learning. Teaching a school subject for example science to students requires different pedagogical uses of ICT than teaching history in school. In each case, the expert teacher needs to make creative links between what are being learned (content), how it is taught (pedagogy), and the appropriate tools (technology).

The awareness and knowledge of technological pedagogical and content knowledge helps the teacher to appreciate and adopt emerging communication technology and innovative process. It provides guidance for the development of high quality strategies and technology plan. It enables the teacher to update the new knowledge and the skills to use the new digital tools and resources. To improve the quality education, the teachers of Tamil nadu schools must acquire the knowledge of technological pedagogical and content knowledge so that they can become effective teachers.

According to K. K. Jamuar (1974) “Efficient learning depends not only on good learning alone but on effective teaching procedures also” (P.173). in order to make the

students learn something the teachers should be efficient and apply an effective way of disseminating knowledge. Even the best-prepared curriculum is worthless unless there is an effective teacher to implement it. It has therefore, become necessary that the teachers should have knowledge ,right and positive attitude and ability to use technology in teaching which in turn make the teaching and learning process more effective.

Research Questions:

The following are the research questions posed in this research.

1. What is the level of contextual pedagogic and technological knowledge, acquired by the by teachers in Tamil nadu?
2. What are the attitudes among teachers' towards implementation of modern technologies in teaching and learning process?
3. Is there a significant relationship between teachers' contextual pedagogic and technological knowledge and their attitudes towards implementation of modern technologies in schools at Tamil nadu.

Research Methodology:

Coverage:

The area of the study consists of three districts in the southern most part of Tamilnadu: Tirunelveli, Tuticorin and Kanyakumari.The investigators propose to use stratified random sampling technique. The sample consists of 1000 teachers working in the government, aided and private schools at primary, secondary and higher secondary level in three districts in the southern most part of Tamilnadu: Tirunelveli, Tuticorin and Kanyakumari.

Data collection

The following tools are proposed to be used by the investigators to collect data.

1. An inventory on the Knowledge of Teachers towards Modern Technologies used in Schools to be constructed and validated by the investigators.
2. A scale on the Attitude of Teachers towards Modern Technologies used in Schools to be constructed and validated by the investigators.

The investigators propose to use survey method to collect data and achieve the purpose of the study.

Data Analysis:

The following are the statistical techniques proposed to be used; Percentage analysis,'t' test,F test,Correlational analysis and Factor analysis.

Implications:

Most importantly, the results of this Study will provide a clear cut status about the technological pedagogical content knowledge and attitude of teachers in Tamil nadu towards the implementation of modern technologies in Tamil nadu schools. When the potentials of the teachers are identified it will help the Tamil nadu government to lay an apt foundation for improving the techno pedagogical content knowledge and attitude of teachers towards the implementation of modern technologies.

Second, the results of this study shall help the teachers to stimulate themselves and thus create opportunities for better use of modern technologies in schools. New training programs, as well as enhancement activities to improve the techno pedagogical content knowledge and attitude of teachers towards the implementation of modern technologies may be drafted by the government of Tamil nadu and frame policies accordingly

Duration of the project:

The duration of the project estimated depending upon the scope and size of the project is one year.

Sl.No.	Items	Duration (in months)
1	Review of Related Literature	2 months
2	Preparation of Tools	3 months
3	Collection of Data	3 months
4	Writing Report	3 months
5	Typing, Proof reading and Printing	1 month
	Total	12 months

Personnel:

Category of personnel needed for various tasks are two field assistants and one technician. Field assistants will serve an administrative function which typically involves sorting and filing important documentation. The technician will assist in setting up and other background works.

Budget:

Sl.No.	Expenditure Heads	Budget (in Rs.)
1	Research Staff: Hired Services	1,20000
2	Fieldwork: Travel/Logistics/Boarding, etc	1,40000
3	Equipment: computer, printer etc. Books/Journals/ Source Material/Software and Data Sets, etc.	1,00000
4	Contingency	90,0000
5	Publication of Report	25,000
6	Institutional Overheads (over and above the total cost of the project to be paid to public funded institutes only)	25,000
	Grand total	5,00000

Annexure – I

B. A Detailed Research Proposal

Discipline of the Project: Education - ICT

Title

"The Knowledge and Attitude of Teachers towards the Implementation of Modern Technologies in Schools"

Aim of the Project

The emergences of new technologies have influenced every aspects of teachers' life. Today, a class room without technology is undreamed of. In order to prepare teachers to find their best way in the 21st century classroom they must be open to the elements of technology. To survive and be successful in teaching profession teachers should acquire technological-pedagogical content knowledge so that realizing the educational and instructional goals and managing the class would be at ease. The broad aim of this study is to investigate if the teachers are aware and ready for the paradigm shift in the teaching learning process from the traditional chalk-and-talk teaching methodology to digitizing the pedagogical approach through technology. It aims at investigating the knowledge and attitude of teachers in Tamil nadu towards the Implementation of modern Technologies in schools by analyzing the inter-relationships between the major pedagogical factors that act in a technology-implementation process.

Statement of the Problem

Technology has the ability to enhance relationships between teaching and learning. It makes teaching and learning more interactive and meaningful. Students are engaged with technology constantly outside of the classroom, learning inside the classroom also must be through technology and now it has become a part of their lifestyle. The technologies are implemented in primary, secondary as well as higher secondary education in Tamil nadu. And so for teachers, technology is considered a necessity to be aware of and also they should posses a positive and right attitude towards the implementation of modern technologies in schools.

However Tamil nadu is a developing state with diversified population. Education for all has become the mission of India and it is rightly carried out by different states by different governments. In Tamil nadu at present the government has made tremendous efforts in the field of education by introducing technologies in schools with the common believe that technologies would make education and learning scientific, understandable, efficient,

effective, and interesting. The government has spent large amounts of money in order to integrate the new technologies in Tamil nadu schools. On the other hand teachers' knowledge related to the use of technology, their attitude and the necessary infrastructure is still relatively wanting. The major research questions this study seeks to explore are as follows: 1) what is the level of contextual pedagogic and technological knowledge, acquired by the by teachers in Tamil nadu? 2) What are the attitudes among teachers' towards the use of technologies in teaching and learning process? 3) Is there a significant relationship between teachers' contextual pedagogic and technological knowledge and their attitudes towards implementation of modern technologies in schools at Tamil nadu.

The responses to these questions will propose several options for making the teachers to acquire more knowledge and posses a right and positive attitude towards implementation of modern technologies in schools at Tamil nadu. The investigators propose to carry out an inclusive participatory investigation by the way of interviewing the teachers personally and collecting data through survey method. So this study on the Teachers' knowledge and attitudes towards the implementation of modern technologies in schools at Tamil nadu will be quantitative as well as a qualitative study.

Conceptual Framework

Gurukula System of Education was the mode of education in India. Because of the increase in population there was a change in this system. Consequently, the number of teachers increased. After one or two years of meticulous training quality teachers were produced. To enhance their teaching, some teachers use teaching aids, like, charts, flash cards, pictures, models: static and working, specimen, slides, and so on. Teachers use these alone as they are given training both in preparation and use of Audio-visual Aids. Central and State Government of India realized the need of improving quality of education through the use of technology whereas teachers do not have enough knowledge of technology and they have no much positive attitude as they think that they may slack their identity. At present the government of Tamil nadu is introducing more new innovative technologies in schools and so it is essential to know the level of knowledge and attitude of teachers towards the implementation of modern technologies in Tamil nadu schools.

In the last strides of the twentieth century, both school education and society have witnessed bizarre hi-tech advancements. All these changes occurred in quick succession in school and society, coupled with new challenges to be faced in the initial decades of the twenty first century. Usage of informational technology has become a fundamental element

of present life and indispensable instrument in most of the fields. Some teachers are happily raised to the challenges of information technology using computers and Internet, but many others for a variety of reasons are not able to do so. It might also be deduced from other sources that many teachers do not know how to use, in the mass of information, which is so easily accessible.

Technology

The term technology refers to the machinery and equipment developed from the application of scientific knowledge for example the numerous types of media that deliver text, audio, images, animation, and streaming video.

Technology for Teaching and Learning

Education, the act or process of acquiring an imparting knowledge is crucial to the development of a learner with a view to his/her participation in the transformation of the world for the better tomorrow. For this transformation appropriate technological processes and resources are used in the classrooms for facilitating teaching and learning and improving the performance of both teachers and students. At present the Tamilnadu government has rolled out the much expected implementation of innovative technologies in schools. In reaffirming its commitment towards transforming the school education it has introduced number of new technologies in the teaching and learning process. The following are some of the technologies in implemented in the school education by the government of Tamilnadu.

Internet

A network of network or Internet is a group of two or more networks that are interconnected physically. Capable of communicating and sharing data with each other and able to act together as a single network.

Internet is also called information superhighway. Machines on one network communicate with machines on another network and send data, files and other information back and forth.

The Internet offers access to data, sound, software, text and people through a variety of services and tools for communication and data exchange. Internet is the cheapest and fastest means to get information, provide information, and compile information. Now, we are going to see some of the applications of Internet.

Electronic Mail

Electronic mail or E-mail, allows information to be set between components and people on the Internet. It is the most widely used Internet resources. Just as a written letter

can be sent to multiple recipients on electronic mail, message can be sent to one or more E-mail addresses. An E-mail address identifies a person and the computer for purposes of exchanging electronic mail messages. Global communication is easier. Because round the clock, from anywhere in the world we can get endless amount of data and information.

Video Conferencing

Video conferencing is one of the most exciting areas of development in telecommunication with applications ranging from business to government, education to home and family. Video conferencing involves sending video signals as well as telephone and computer data signals.

Telephone Conferencing

Internet can also be used to make telephone calls around the world, for only the cost of a local connection. Audio conferencing allows us to communicate verbally, rather than typing messages. It works by digitalizing once voice, then sending a digital data to its final destination via the Internet.

E- Books

Andries Van Dam, a professor of technology at Brown University, coined the term electronic book. The concept of portable e-book was emerged in the late seventies. The electronic format of content is transmitted and displayed on a device called e-book reader, to be viewed by the viewer. It is almost similar in experience to reading a printed book. An e-book is written in machine-readable form.

Virtual Reality

Virtual reality provides synthetic experience where the learners remember as their own. Teachers should appreciate the fact that virtual environments teach content and processes in the same theme. It gives a real experience of any context. The variety of applications is limited only imagination.

Multimedia

Multimedia is one of the fastest growing and most exciting areas in the information and communication technology fields. Hundreds and thousands of people are putting together text, pictures, animations, movies and sounds to create multimedia presentation, courses, and interactive web pages and so on. Multimedia is widely used in the entertainment and educational fields.

QR Code

A Quick Response (Q R) code is a type of barcode that contains a matrix of dots. It is a type of two-dimensional barcode used for providing easy access to information through a QR scanner or a Smartphone with built-in camera. The content for the classes I, VI, IX and XI hosted by Tamil nadu government as a part of new text book and revamped includes digital content for both teachers and the students. Starting this academic session (2018-2019), teachers and students in the state of Tamil nadu are using the energized textbooks that provide them with more information and contextualized content in the form of video films and audios accessible through QR codes, in addition to traditional textbooks.

Robot - teachers

The government of Tamil nadu has announced a project of introducing Robot - Teachers in the schools at Tamil Nadu. Finnish, Chinese and Korean schools have employed robot-teachers that can speak multiple languages and adjust their methods to meet students' skill levels. This robot teacher can adjust expectations to match students' specific skill levels. It can report about students' progress also to the parents and the management.

Technology and Teacher Effectiveness

Educational system around the world is under increasing pressure to use the new information and communication technologies to teach students the knowledge and skills; they need in the 21st century. The 1998, UNESCO world Education Report mentions that, teachers and teaching in a changing world describes the transformation of the teaching learning process and the way teachers and learners again access to knowledge and information. It states, “To effectively harness the power of the new information and communication technologies to improve learning, the following essential conditions must be met”.

1. Students and teachers must have efficient access to digital technologies
2. Internet in their classrooms, schools and teacher education institutions must be available.
3. High quality, meaningful and culturally responsive digital content must be available for teachers and learners.
4. Teachers must have the knowledge and skills to use new digital tools and resources to help all students to achieve high academic standards.

Technologies have changed the nature of work and types of skills needed in most fields and professions.

The UNESCO world education report (1998) notes that the new technologies challenge traditional conceptions of both teaching and learning by reconfiguring our teachers and learners gain access to knowledge; have the potential to transform teaching and learning process. Technologies provide an array of powerful tools that may help in transforming the present isolated, teacher-centered and text-bound classroom into rich student focused, interactive environment.

The developmental aspect in all sections of a country depends much upon the quality of the teachers. So the educational system around the world are under increasing pressure to use the new information and communication technology to teach students to the knowledge and skills they need in 21st century. Designing and implementing successful technology enabled teacher process is the key to fundamental wide ranging educational reforms.

Technological Pedagogical Content Knowledge (TPACK)

Universally it is accepted that expert teachers are those who can bring together their deep knowledge of subject matter with profound understanding of what is good for learning. The combination has been described as Pedagogical Content Knowledge (PCK) and is more than the simple addition of two parts. The fusion is what enabled expert 20th century teachers to transform subject content and represent it in ways that made it accessible to individual learners in their specific contexts.

In the 21st century, Information and Communication Technology (ICT) is providing teachers with new ways to access and process knowledge in the field of education. ICT is also transforming pedagogy by providing new ways to engage learners.

At present expert teachers now are those who can bring together knowledge of subject matter, what is good for learning, and technology (ICT). The combination is described as Technological Pedagogical Content Knowledge (TPACK). It is more than simply adding ICT to traditional approaches. It depends upon deep knowledge of how ICT can be used to access and process subject matter (TCK) and understanding how ICT can support and enhance learning (TPK) in combination with PCK.

The expertise embodied in the TPACK of a teacher is different from the knowledge of a discipline expert, a technologist, or an expert on learning. Teaching a school subject for example science to students requires different pedagogical uses of ICT than teaching history in school. In each case, the expert teacher needs to make creative links between what are being learned (content), how it is taught (pedagogy), and the appropriate tools (technology).

The awareness and knowledge of technological pedagogical and content knowledge helps the teacher to appreciate and adopt emerging communication technology and innovative process. It provides guidance for the development of high quality strategies and technology plan. It enables the teacher to update the new knowledge and the skills to use the new digital tools and resources. To improve the quality education, the teachers of Tamil nadu schools must acquire the knowledge of technological pedagogical and content knowledge so that they can become effective teachers.

According to K. K. Jamuar (1974) "Efficient learning depends not only on good learning alone but on effective teaching procedures also" (P.173). in order to make the students learn something the teachers should be efficient and apply an effective way of disseminating knowledge. Even the best-prepared curriculum is worthless unless there is an effective teacher to implement it. It has therefore, become necessary that the teachers should have knowledge, right and positive attitude and ability to use technology in teaching which in turn make the teaching and learning process more effective.

Hypotheses

DIFFERNTIAL ANALYSIS

1. There is no significant difference between the primary teachers in their technological pedagogical content knowledge with reference to gender, nativity, locality of school, marital status.
2. There is no significant difference among the primary teachers in their technological pedagogical content knowledge with reference to age, educational qualification, type of school and teaching experience.
3. There is no significant difference between the primary teachers in attitude towards implementation of modern technologies with reference to gender, nativity, locality of school, marital status.
4. There is no significant difference among the primary teachers in the attitude towards implementation of modern technologies with reference to age, educational qualification, type of school and teaching experience.
5. There is no significant difference between the secondary teachers in their technological pedagogical content knowledge with reference to gender, nativity, locality of school, marital status.

6. There is no significant difference among the secondary teachers in their technological pedagogical content knowledge with reference to age, educational qualification, type of school and teaching experience
7. There is no significant difference between the secondary teachers in attitude towards implementation of modern technologies with reference to gender, nativity, locality of school, marital status.
8. There is no significant difference among the secondary teachers in the attitude towards implementation of modern technologies with reference to age, educational qualification, type of school and teaching experience.
9. There is no significant difference between the higher secondary teachers in their technological pedagogical content knowledge with reference to gender, nativity, locality of school, marital status.
10. There is no significant difference among the higher secondary teachers in their technological pedagogical content knowledge with reference to age, educational qualification, type of school and teaching experience
11. There is no significant difference between the higher secondary teachers in attitude towards implementation of modern technologies with reference to gender, nativity, locality of school, marital status.
12. There is no significant difference among the higher secondary teachers in the attitude towards implementation of modern technologies with reference to age, educational qualification, type of school and teaching experience

CORRELATIONAL ANALYSIS

1. There is no significant relationship between technological pedagogical content knowledge and attitude of primary teachers towards implementation of modern technologies with reference to background variables such as gender, teaching experience, marital status and locality of the school.
2. There is no significant relationship between technological pedagogical content knowledge and attitude of secondary teachers towards implementation of modern technologies with reference to background variables such as gender, teaching experience, marital status and locality of the school.
3. There is no significant relationship between technological pedagogical content knowledge and attitude of higher secondary teachers towards implementation of

modern technologies with reference to background variables such as gender, teaching experience, marital status and locality of the school.

FACTOR ANALYSIS

1. There is no significant influence of technological pedagogical content knowledge on the attitude of primary teachers towards implementation of modern technologies with reference to background variables such as gender, teaching experience, marital status and locality of the school.
2. There is no significant influence of technological pedagogical content knowledge on the attitude of secondary teachers towards implementation of modern technologies with reference to background variables such as gender, teaching experience, marital status and locality of the school.
3. There is no significant influence of technological pedagogical content knowledge on the attitude of higher secondary teachers towards implementation of modern technologies with reference to background variables such as gender, teaching experience, marital status and locality of the school.

Overview of Literature

Alabede Kasali Oketunde (2017) investigated a study on The Implementation of Information and Communication Technology (ICT) for Students' Enrollment into Teacher Education in Colleges of Education in Nigeria.

Teacher education is a type of education that refers to as a professional education of teachers towards acquisition of attitudes, skills and knowledge considered desirable so as to make them efficient and effective in their work, in accordance with the need of a given society at any point in time. The teacher education is robust with the integration of ICT for easy flexibility, and with wide range of ICT applications in education sector like online registration for both registration, screening for admission, lecture delivery, assignments posting, online payments and others related works. It states the functions of ICT and its impacts of e-education in the colleges of education. It contains some features associated with ICT usage in colleges of education in Nigeria. It lays more emphasizes on the problems and prospects of ICT usage in colleges of education in Nigeria. Finally, it contains the conclusion and recommendations which serve as a way out for the problems encountering in the ICT application in Nigerian colleges of education.

Allimuthu, N. & Muthupandi, P. (2017) conducted a Study of Attitude towards ICT among B.Ed. Trainees.

The study was intended to find out the Attitude towards B.Ed. trainees in selected districts, Tamilnadu. Cluster sampling techniques was used to select sample of 1050 B.Ed. Trainees. The mean, standard deviation, 't' test and ANOVA test statistical technique have been used in the present study for the analysis of collected data. The result showed that, there is no significant difference in attitude towards ICT of B.Ed. trainees with reference to their gender, locality of the student, types of family, residence, location of the college, nature of college, type of college, smart phone with internet connection in your mobile and face book account. But there is significant difference in attitude towards ICT of B.Ed. trainees with reference to medium of instruction, browsing habit, internet connection at home.

Lulu Sebastine (2018) investigated a study on Attitude of Higher Secondary School Students towards using Online Instructional Package.

The objective of this study was to identify the attitude of higher secondary school students towards using online instructional package in Commerce education at Ernakulam District, Kerala. Online Instructional Attitude Scale was used for this study and it was developed and standardized by the investigator. Survey method was used in this study. Sample comprised of 200 students who were XI^{th} standard students of Government and Aided schools spread over Ernakulam district, Kerala. Data obtained were analyzed by using Mean, Standard Deviation and t-test. The findings of the study revealed that there is significant difference between the attitude of boys and girls in higher secondary school students towards using Online Instructional Package.

Thangamani, D. (2018) conducted a study on Attitude of Student Teachers towards ICT and Usage of ICT Resources.

As teachers of the modern world need to adopt various innovative teaching methods and multitudes of technologies to make the teaching learning process lively, interactive and participate. It was decided to find the current situation that prevails in colleges of education that prepare future teachers in the field of ICT. This study analyzed the attitude of B.Ed. trainees towards ICT and their ICT usage. Samples for the study were chosen by stratified sampling method. 1000 B.Ed. trainees form different colleges of education in Salem district formed the sample. Tools constructed by the investigator and standardized were used to collect data. The research was a normative survey research. The collected data were subjected

to qualitative and quantitative data analysis. It was found that the attitude of .Ed. students towards ICT is moderate.

Operational Definitions

Knowledge

Knowledge refers to the sum of what is known and resides in the intelligence and competence of the people. In the present study this term refers to the theoretical or practical understanding of the facts, information, and skills acquired through experience or education by the teachers those who are working in the government, aided and private schools at primary, secondary and higher secondary levels of education in Tamil nadu.

Attitude

Attitude is the positive or negative degree of effect associated with a certain subject. In the present study attitude refers to persistent tendency of teachers those who are working in the government, aided and private schools at primary, secondary and higher secondary levels of education in Tamil nadu towards the implementation of new technologies in teaching.

Teachers

In the present study the teachers refer to those who are working in the government, aided and private schools at primary, secondary and higher secondary levels of education.

Technology

Technology, here, refers to diverse set of technological tools implemented by the government of Tamilnadu to communicate, create, disseminate, store, and manage information in classrooms. These technologies include computers, Internet, QR code, Smart classrooms, Robotic teachers and broadcasting technologies like radio and television.

Implementation

The term implementation refers to the Tamil nadu government process of making the new technologies active in the classrooms of government, aided and private schools at primary, secondary and higher secondary levels of education.

Scope of the Study

The scope of the study is to get the first-hand knowledge about the knowledge and attitude of teachers who are working in the government, aided and private schools at primary, secondary and higher secondary levels of education towards the implementation of new

technologies in school. All government, aided and private schools of Tamil nadu form the scope of study.

In the proposed study the researchers will only investigate the knowledge and attitude of teachers who are working in the government, aided and private schools at primary, secondary and higher secondary levels of education towards the implementation of new technologies in school. The head of the institutions and other people working in the schools will not be included in the study. The investigators will only investigate the level of knowledge and attitude of teachers towards implementation of new technologies and observe if there is any significant influence of knowledge of the teachers' on their attitude towards implementation of new technologies in school.

Research Methodology

The Universe of the Study

The universe of the study includes teachers working in different schools in Tamilnadu.

Area of the Study

The area of the study consists of three districts in the southern most part of Tamilnadu: Tirunelveli, Tuticorin and Kanyakumari.

Sampling Frame

The sampling frame includes: Teachers working in government schools at primary, secondary and higher secondary level; Teachers working in government aided schools at primary, secondary and higher secondary level; and Teachers working in private schools at primary, secondary and higher secondary level.

Sampling Method

The investigators propose to use stratified random sampling technique.

Sampling Size

The sample consists of 1000 teachers working in the government, aided and private schools at primary, secondary and higher secondary level in three districts in the southern most part of Tamilnadu: Tirunelveli, Tuticorin and Kanyakumari.

Tools used

The following tools are proposed to be used by the investigators to collect data.

1. An inventory on the Technological Pedagogical Content Knowledge of Teachers to be constructed and validated by the investigators.

2. A scale on the Attitude of Teachers towards Implementation of Modern Technologies in Schools to be constructed and validated by the investigators.

Methods Selected for the Study

The investigators propose to use survey method to collect data and achieve the purpose of the study.

Data Analysis:

The following are the statistical techniques proposed to be used;

1. Percentage analysis
2. 't' test
3. F test
4. Correlational analysis
5. Factor analysis

Justification of the Study

At present the government of Tamil Nadu is introducing more new innovative technologies in schools and so it is essential to know the level of knowledge and attitude of teachers towards the implementation of modern technologies in Tamil nadu schools. This research would reveal the level of the knowledge and attitude of teachers towards the implementation of modern technologies and the relationship between them.

This would help the Tamil Nadu Government who wishes to train teachers in technology use, Teacher-training colleges, and school administrators wishing to introduce specific technologies into their schools or school systems, and other stakeholders in education to train teachers according to their knowledge level. This study is more important because when a new piece of technology is given by the government by all means it should know how comfortable a teacher is with technology as it will directly impact the integration of technology in their classroom.

Expected Outcomes

Most importantly, the results of this Study will provide a clear cut status about the technological pedagogical content knowledge and attitude of teachers in Tamil nadu towards the implementation of modern technologies in Tamil nadu schools. When the potentials of the teachers are identified it will help the Tamil nadu government to lay an apt foundation for improving the techno pedagogical content knowledge and attitude of teachers towards the implementation of modern technologies.

Second, the results of this study shall help the teachers to stimulate themselves and thus create opportunities for better use of modern technologies in schools. New training programs, as well as enhancement activities to improve the techno pedagogical content knowledge and attitude of teachers towards the implementation of modern technologies may be drafted by the government of Tamil nadu and frame policies accordingly.

Chapterization

Chapter I – Introduction and conceptual framework

Chapter II – Review of related literature

Chapter III – Research methodology

Chapter IV – Data analysis and Findings

Chapter V – Discussions, Recommendations and Implications

Time Frame

The investigators propose the following time frame for the completion of the research project.

Sl.No.	Items	Duration (in months)
1	Review of Related Literature	2 months
2	Preparation of Tools	3 months
3	Collection of Data	3 months
4	Writing Report	3 months
5	Typing, Proof reading and Printing	1 month
	Total	12 months

Estimated Budget

Sl.No.	Expenditure Heads	Budget (in Rs.)
1	Research Staff: Hired Services	1,20000
2	Fieldwork: Travel/Logistics/Boarding, etc	1,40000
3	Equipment: computer, printer etc. Books/Journals/ Source Material/Software and Data Sets, etc.	1,00000
4	Contingency	90,0000
5	Publication of Report	25,000
6	Institutional Overheads (over and above the total cost of the project to be paid to public funded institutes only)	25,000
	Total	5,00000

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