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EFFECTIVENESS OF TECHNOLOGY INTEGRATION DURING INTENSIVE TEACHING PRACTICE BY SCIENCE OPTIONAL PROSPECTIVE TEACHERS

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ABSTRACT

Incorporating technology into the classroom requires a double innovation. Effective integration of technology is achieved when students are able to select technology tools to help them obtain information in a timely manner, analyze and synthesize the information, and present it professionally. The technology should become an integral part of how the classroom functions -- as accessible as all other classroom tools.

KEYWORDS: *History, Slavery, Atlantic Slave Trade, Caribbean, Diaspora.*

INTRODUCTION:

Technology integration is the use of technology resources -- computers, mobile devices like smart phones and tablets, digital cameras, social media platforms and networks, software applications, the Internet, etc. -- in daily

classroom practices, and in the management of a school. Successful technology integration is achieved when the use of technology is:

- Routine and transparent.
- Accessible and readily available for the task at hand.
- Supporting the curricular goals, and helping the students to effectively reach their goals.

SIGNIFICANCE OF THE SUDY

Once teachers have mastered the basics of ICTs operating systems, word processing, and e-mail and Internet navigation—they can use the technology to access professional development opportunities. This enables anytime, anywhere learning and overcomes the conventional limitations of face-to-face teaching and learning. Also, it is important that unless integrating technology in teaching, it is not possible to gain the attention of students. Hence the title was planned as "Effectiveness of technology integration during intensive teaching practice by Science optional Prospective teachers"

OBJECTIVES OF THE STUDY

MAJOR OBJECTIVE

1.To find out if the integration of technology by prospective teachers during intensive teaching practice creates its effectiveness.

MINOR OBJECTIVES

1.To construct a tool to evaluate the awareness of prospective teachers on technology usage during intensive teaching practice.

2.To construct a tool to identify prospective teachers' willingness to use technology during intensive teaching practice.

3.To find significant difference in the awareness of prospective teachers on technology usage during intensive teaching practice.

4.To find significant difference in the willingness of prospective teachers to use technology during intensive teaching practice

HYPOTHESES OF THE STUDY

In this study the following hypotheses was formulated for verification.

1.There is no significant difference in the awareness of prospective teachers on technology usage during intensive teaching practice with respect to the dimensions
a.Knowledge updation
b.Discussion with Teacher Educators and Peer group
c.Instructional Strategies (Skill Integration)
d.Classroom Management Strategies
e.Evaluation
f.Assignments
g.Instructional materials
based on
i.Purpose of internet usage
ii.Knowledge on social networking
iii.Social networking usage by the teacher for education
iv.Classroom strategy
v.Internet in school
vi.Internet usage for students in school
2.There is no significant difference in the awareness of prospective teachers on technology usage during intensive teaching practice with respect to the dimensions
a.Knowledge updation
b.Discussion with Teacher Educators and Peer group
c.Instructional Strategies (Skill Integration)
d.Classroom Management Strategies
e.Evaluation
f.Assignments
g.Instructional materials based on internet usage

Tool Preparation

Tool 1- Self made tool to evaluate the awareness of prospective teachers on technology usage during intensive teaching practice.

The investigator prepared a self made tool to assess the awareness of prospective teachers on technology usage during intensive teaching practice based on the following dimensions.

Dimensions for assessing the awareness of prospective teachers on technology usage during intensive teaching practice

The investigator has identified 7 dimensions for studying the awareness of prospective teachers on technology usage during intensive teaching practice.

Dimensions for assessing the awareness of prospective teachers on technology usage during intensive teaching practice

S.No	Dimension
1	Knowledge updation
2	Discussion with Teacher Educators and Peer group
3	Instructional Strategies (Skill Integration)
4	Classroom Management Strategies
5	Evaluation
6	Assignments
7	Instructional materials

METHOD USED IN THE STUDY

The nature of the problem and the objectives framed for the study determine the method for collecting the required data. As the area of investigation and the population of the present study are vast, the investigator

has chosen the survey method for this study.

POPULATION

The population for this study consists of prospective teachers from colleges of education affiliated to TamilNadu Teachers Education University, Chennai.

SAMPLE

The sample for this study consists of 250 Science optional prospective teachers from colleges of education affiliated to TamilNadu Teachers Education University, Chennai from Thoohukudi district.

STATISTICAL TECHNIQUES USED

T-Test , F test

Table showing the awareness of prospective teachers on technology usage during intensive teaching practice with respect to all the dimensions based on the variable purpose of internet usage.

(At 5 % level of significance, the table value of 't' is 1.96)

It is inferred from the above table that there is significant difference in the awareness of prospective teachers on technology usage during intensive teaching practice with respect to the dimensions knowledge updation, discussion with teacher educators and peer group and evaluation. But there is no significant difference in the prospective teachers on technology usage during intensive teaching practice with respect to the dimensions instructional Strategies (Skill Integration), classroom management strategies, assignments and instructional materials.

Dimension	Variable		N	Mean	Std. Deviation	calculated 't' value	Table value	Remarks at 5% level
D1	Purpose of internet usage	Academic	150	12.28	2.520	**3.463**	1.96	Significant
		Entertainment	100	13.36	2.250			
D2		Academic	150	5.69	1.380	**5.162**	1.96	Significant
		Entertainment	100	6.62	1.405			
D3		Academic	150	10.72	2.010	0.695	1.96	Not Significant
		Entertainment	100	10.53	2.186			
D4		Academic	150	17.17	3.210	1.856	1.96	Not Significant
		Entertainment	100	17.94	3.184			
D5		Academic	150	6.21	1.468	**4.043**	1.96	Significant
		Entertainment	100	6.95	1.321			
D6		Academic	150	4.26	1.543	1.357	1.96	Not Significant
		Entertainment	100	4.51	1.345			
D7		Academic	150	11.16	2.053	1.139	1.96	Not Significant
		Entertainment	100	11.52	2.680			
Awareness		Academic	150	67.50	11.486	**2.604**	1.96	Significant
		Entertainment	100	71.43	11.988			

dimensions knowledge updation, discussion with teacher educators and peer group and evaluation. But there is no significant difference in the prospective teachers on technology usage during intensive teaching practice with respect to the dimensions instructional Strategies (Skill Integration), classroom management strategies, assignments and instructional materials.

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Table showing the awareness of prospective teachers on technology usage during intensive teaching practice with respect to all the dimensions based on the variable knowledge on social networking
(At 5 % level of significance, the table value of 't' is 1.96)

It is inferred from the above table that there is significant difference in the awareness of

Dimension	Variable		N	Mean	Std. Deviation	calculated 't' value	Table value	Remarks at 5% level
D1	Knowledge on social networking	Yes	150	13.18	2.020	**3.121**	1.96	Significant
		No	100	12.16	2.350			
D2		Yes	150	4.69	1.490	**4.664**	1.96	Significant
		No	100	5.12	1.305			
D3		Yes	150	10.32	2.010	0.784	1.96	Not Significant
		No	100	10.79	2.112			
D4		Yes	150	15.17	2.710	**1.996**	1.96	Significant
		No	100	17.94	3.184			
D5		Yes	150	7.121	1.567	**4.243**	1.96	Significant
		No	100	5.095	1.432			
D6		Yes	150	5.26	1.234	1.334	1.96	Not Significant
		No	100	3.51	1.345			
D7		Yes	150	12.16	1.053	1.067	1.96	Not Significant
		No	100	11.52	2.680			
Awareness		Yes	150	68.64	11.234	**2.734**	1.96	Significant
		No	100	73.113	12.076			

prospective teachers on technology usage during intensive teaching practice with respect to the dimensions knowledge updation, discussion with teacher educators and peer group, classroom management strategies and evaluation. But there is no significant difference in the prospective teachers on technology usage during intensive teaching practice with respect to the dimensions instructional strategies (Skill Integration), assignments and instructional materials.

Table showing the awareness of prospective teachers on technology usage during intensive teaching practice with respect to all the dimensions based on the variable social networking usage by the teacher for education.

(At 5 % level of significance, the table value of 't' is 1.96)

Dimension	Variable		N	Mean	Std. Deviation	calculated 't' value	Table value	Remarks at 5% level
D1	Social networking usage by the teacher for education	Yes	150	12.18	2.123	**3.178**	1.96	Significant
		No	100	13.16	2.456			
D2		Yes	150	5.96	1.432	**4.221**	1.96	Significant
		No	100	4.21	1.389			
D3		Yes	150	12.23	2.167	1.084	1.96	Not Significant
		No	100	9.65	2.233			
D4		Yes	150	17.17	2.678	**1.962**	1.96	Not Significant
		No	100	17.94	3.234			
D5		Yes	150	5.123	1.567	**4.093**	1.96	Significant
		No	100	7.561	1.562			
D6		Yes	150	3.26	1.112	1.432	1.96	Not Significant
		No	100	5.51	1.908			
D7		Yes	150	11.06	1.977	1.088	1.96	Not Significant
		No	100	10.62	2.112			
Awareness		Yes	150	67.74	10.114	**2.782**	1.96	Significant
		No	100	74.133	13.086			

It is inferred from the above table that there is significant difference in the awareness of prospective teachers on technology usage during intensive teaching practice with respect to the dimensions knowledge updation, discussion with teacher educators and peer group, classroom management strategies and evaluation. But there is no significant difference in the prospective teachers on technology usage during intensive teaching practice with respect to the dimensions instructional strategies (Skill Integration), assignments and instructional materials.

Table showing the awareness of prospective teachers on technology usage during intensive teaching practice with respect to all the dimensions based on the variable classroom strategy

Dimension	Variable		N	Mean	Std. Deviation	calculated 't' value	Table value	Remarks at 5% level
D1	Classroom strategy	Lecture only	150	14.21	2.134	**3.223**	1.96	Significant
		Lecture cum technology	100	13.61	2.260			
D2		Lecture only	150	5.56	1.890	**4.656**	1.96	Significant
		Lecture cum technology	100	6.16	1.236			
D3		Lecture only	150	10.78	2.923	0.90	1.96	Not Significant
		Lecture cum technology	100	10.23	2.239			
D4		Lecture only	150	16.07	2.824	1.546	1.96	Not Significant
		Lecture cum technology	100	18.84	3.236			
D5		Lecture only	150	9.121	1.234	**4.890**	1.96	Significant
		Lecture cum technology	100	7.095	1.789			
D6		Lecture only	150	7.26	1.567	1.113	1.96	Not Significant
		Lecture cum technology	100	5.51	1.546			
D7		Lecture only	150	13.16	1.353	**1.998**	1.96	Not Significant
		Lecture cum technology	100	12.52	2.880			
Awareness		Lecture only	150	69.64	12.134	**2.234**	1.96	Significant
		Lecture cum technology	100	74.113	11.776			

At 5 % level of significance, the table value of 't' is 1.96).

It is inferred from the above table that there is significant difference in the awareness of prospective teachers on technology usage during intensive teaching practice with respect to the dimensions knowledge updation, discussion with teacher educators and peer group, evaluation and instructional materials. But there is no significant difference in the prospective teachers on technology usage during intensive teaching practice with respect to the dimensions instructional Strategies (Skill Integration), classroom management strategies and assignments.

Table showing the awareness of prospective teachers on technology usage during intensive teaching practice with respect to all the dimensions based on the variable internet in school

Dimension	Variable		N	Mean	Std. Deviation	calculated 't' value	Table value	Remarks at 5% level
D1	Internet in school	Yes	150	13.18	2.978	**3.987**	1.96	Significant
		No	100	12.16	2.345			
D2		Yes	150	4.69	1.432	**3.354**	1.96	Significant
		No	100	5.12	1.376			
D3		Yes	150	10.32	2.121	0.98	1.96	Not Significant
		No	100	10.79	2.234			
D4		Yes	150	15.17	2.890	1.938	1.96	Not Significant
		No	100	17.94	3.112			
D5		Yes	150	7.121	1.678	**4.435**	1.96	Significant
		No	100	5.095	1.425			
D6		Yes	150	5.26	1.785	1.213	1.96	Not Significant
		No	100	3.51	1.345			
D7		Yes	150	12.16	1.098	1.034	1.96	Not Significant
		No	100	11.52	2.345			
Awareness		Yes	150	68.64	11.098	**2.987**	1.96	Significant
		No	100	73.113	12.118			

(At 5 % level of significance, the table value of 't' is 1.96)

It is inferred from the above table that there is significant difference in the awareness of prospective teachers on technology usage during intensive teaching practice with respect to the dimensions knowledge updation, discussion with teacher educators and peer group and evaluation. But there is no significant difference in the prospective teachers on technology usage during intensive teaching practice with respect to the dimensions instructional Strategies (Skill Integration), classroom management strategies, assignments and instructional materials.

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Table showing the awareness of prospective teachers on technology usage during intensive teaching practice with respect to all the dimensions based on the variable internet usage for students in school

Dimension	Variable		N	Mean	Std. Deviation	calculated 't' value	Table value	Remarks at 5% level
D1	Internet usage for students in school	Yes	150	13.21	2.020	**3.234**	1.96	Significant
		No	100	12.45	2.350			
D2		Yes	150	4.89	1.490	**4.178**	1.96	Significant
		No	100	5.123	1.305			
D3		Yes	150	10.789	2.010	0.998	1.96	Not Significant
		No	100	10.675	2.112			
D4		Yes	150	15.234	2.710	1.897	1.96	Not Significant
		No	100	17.567	3.184			
D5		Yes	150	7.234	1.567	**4.453**	1.96	Significant
		No	100	5.123	1.432			
D6		Yes	150	5.345	1.234	1.212	1.96	Not Significant
		No	100	3.897	1.345			
D7		Yes	150	12.12	1.053	1.127	1.96	Not Significant
		No	100	11.89	2.680			
Awareness		Yes	150	68.567	11.234	**2.979**	1.96	Significant
		No	100	73.023	12.076			

(At 5 % level of significance, the table value of 't' is 1.96)

It is inferred from the above table that there is significant difference in the awareness of prospective teachers on technology usage during intensive teaching practice with respect to the dimensions knowledge updation, discussion with teacher educators and peer group and evaluation. But there is no significant difference in the prospective teachers on technology usage during intensive teaching practice with respect to the dimensions instructional Strategies (Skill Integration), classroom management strategies, assignments and instructional materials.

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Table showing the awareness of prospective teachers on technology usage during intensive teaching practice based on internet usage

Dimension	Variable	Source of variation	Sum of Squares	Mean Square	F Value	Table value	Remarks
D1	Internet usage	Between groups	6.701	2.234	0.364	3.1505	1.96
		Within groups	1510.563				
D2		Between groups	1.567	0.522	0.243		1.96
		Within groups	529.409				
D3		Between groups	15.043	5.014	1.161		1.96
		Within groups	1062.273				
D4		Between groups	14.230	4.743	0.456		1.96
		Within groups	2560.170				
D5		Between groups	15.936	5.312	2.559		1.96
		Within groups	510.548				
D6		Between groups	2.203	0.734	0.337		1.96
		Within groups	535.397				
D7		Between groups	3.861	1.287	0.236		1.96
		Within groups	1343.035				
Awareness		Between groups	254.736	84.912	0.604		1.96
		Within groups	34557.968				

It is inferred from the above table that there is no significant difference in the awareness of prospective teachers on technology usage during intensive teaching practice with respect to all the dimensions.

DISCUSSION BASED ON T –TEST ANALYSIS

1.It is inferred from the table that there is significant difference in the awareness of prospective teachers on technology usage during intensive teaching practice with respect to the dimensions knowledge updation, discussion with teacher educators and peer group and evaluation based on the variable purpose of internet usage.

The reason may be that prospective teachers in order to make their classroom a passive one and to modernize the concepts they taught, they navigate internet and World Wide Web to update their knowledge through technology. There are hundreds of interactive applications available for teaching, enhancing collaboration and facilitating dynamic interaction. Online Forums are a great way to communicate with other subject experts. These forums are the ideal place to promote discussions, exchange opinions and ask for advice on subjects which will enrich the knowledge in the subject with the teacher educators and peer group. Digital tools used in or out of the classroom can significantly enhance the learning experience by helping the teachers use class time for interactions that matter most, capturing students' attention, and assessing their progress towards subject outcomes.

2. It is also inferred from the table that there is no significant difference in the prospective teachers on technology usage during intensive teaching practice with respect to the dimensions instructional Strategies (Skill Integration), classroom management strategies, assignments and instructional materials based on the variable purpose of internet usage.

The cause behind this may be technology-enriched classes positively affect students' personal and intellectual development however the challenges begin with the perception of the teacher to use technology, hardware complexities, mismatch of technology usage for concepts, and educational organizations. The teachers may face technology failures while implementing the same inside the classroom or there may be restriction to use and access technology inside the classroom.

3. It is inferred from the table that there is significant difference in the awareness of prospective teachers on technology usage during intensive teaching practice with respect to the dimensions knowledge updation, discussion with teacher educators and peer group, classroom management strategies and evaluation based on the variable knowledge on social networking.

The reason may be social media technologies offer the capability to both receive and create content with the hope that a collective intelligence emerges. The goal is to improve students' learning experiences to prepare them to enter a workforce that is not geographically constrained and expects them to have highly developed online collaboration skills. The pursuit of such benefits drives academics to incorporate new technological approaches in their teaching methodology. Here the prospective teachers based on the training they gained through their teacher educator on google drives, blogs, flipped classroom and presentation software apart from powerpoint such as prezi made them to implement such strategies during their intensive teaching.

4. But there is no significant difference in the prospective teachers on technology usage during intensive teaching practice with respect to the dimensions instructional strategies (Skill Integration), assignments and instructional materials based on the variable knowledge on social networking.

The reason may be that the prospective teachers may fail in deciding how or when these technologies make sense for them and the students in their respective classrooms to use during their intensive teaching practice. The prospective teachers need to focus on differences (if there is any) in the online methodology, strengths and weaknesses of these models, the technical issues expected if the method is applied to online environments

5. It is inferred from the table that there is significant difference in the awareness of prospective teachers on technology usage during intensive teaching practice with respect to the dimensions knowledge updation, discussion with teacher educators and peer group, classroom management strategies and evaluation based on the variable social networking usage by the teacher for education.

The reason may be prospective teachers have idea on incorporating social media approaches in the classroom effectively because they are also the learners in social media in their teacher educators blog and drive. They have hands on experience on it and hence they will solve practical issues if any during their implementation. And it was especially easy for students to form study groups online. Interaction with teachers and peer members are possible at any time and hence the achievement will be better with the use of social media usage by the teacher inside the classroom.

6. But there is no significant difference in the prospective teachers on technology usage during intensive teaching practice with respect to the dimensions instructional strategies (Skill Integration), assignments and instructional materials based on the variable social networking usage by the teacher for education. The reason may be although most students had used social media in their personal lives, they needed instruction on how to use them safely in an educational setting. The prospective teachers must design time and opportunities for the use of social media activities into their classroom. Both the prospective teachers and the students in their intensive teaching classroom must be open to learning and using new social media classroom approaches that extend and enhance instructor-student interactions.

7.It is inferred from the table that there is significant difference in the awareness of prospective teachers on technology usage during intensive teaching practice with respect to the dimensions knowledge updation, discussion with teacher educators and peer group, evaluation and instructional materials based on the variable classroom strategy.

The reason may be that with social network, teachers build pages for their classes that they can it use for communicating class announcements, class activities and assignment deadlines which will attract the students to a larger extent since they are facing a new paradigm shift in their learning. The prospective teachers know to prepare presentations using powerpoint and prezi, share the instructional resources using google groups and google drive. The prospective teachers may find the social media platforms as novel ways to teach and share information, as well as to establish an online connection with their students.

8. But there is no significant difference in the prospective teachers on technology usage during intensive teaching practice with respect to the dimensions instructional Strategies (Skill Integration), classroom management strategies and assignments based on the variable classroom strategy.

The reason may be that although personal blogging, posting, and networking might be the top priority of students, harnessing the immense reach of technology for academic purposes might be a close second. The prospective teachers can and should establish the urgency for this new type of social media usage, and encourage the excitement, creativity, and passion of their students to drive it forward in classroom. For that some new alternatives to assignment programmes should be chosen by the prospective teachers. They may ask the students to submit their assignments through groups or else through their teachers blog.

9. It is inferred from the table that there is significant difference in the awareness of prospective teachers on technology usage during intensive teaching practice with respect to the dimensions knowledge updation, discussion with teacher educators and peer group and evaluation based on the variable internet in school.

The reason may be social media approaches changed the classroom behaviour of both the instructor and students. The role of the teacher changed primarily from a presenter of knowledge to more of a facilitator and mentor. This role change was also accompanied by changes in the pedagogy. If internet accessibility is more, then the prospective teacher may get more time on updating their knowledge, interaction with subject experts across online, setting up and effectively use several social media approaches for their classroom. This approach will also make the students to be active learners apart from passive participants. From this we concluded that the availability of internet in a school is not a constraint for developing awareness of prospective teachers on technology usage.

10.But there is no significant difference in the prospective teachers on technology usage during intensive teaching practice with respect to the dimensions instructional Strategies (Skill Integration), classroom management strategies, assignments and instructional materials based on the variable internet in school.

The reason may be poor internet connectivity, lack of internet availability, limited access to internet resources, limited technology usage. The technology driven classrooms should enable students to develop and practice the skills and acquire the knowledge they will need in a volatile, uncertain, complex and ambiguous world. But there is no possibility in some schools to access these resources.

11.It is inferred from the above table that there is significant difference in the awareness of prospective teachers on technology usage during intensive teaching practice with respect to the dimensions knowledge updation, discussion with teacher educators and peer group and evaluation based on the variable internet usage for students in school.

The reason may be that social media and technology usage encourages student participation and engagement in a relaxed, friendly and inviting environment and if a school provides environment for their students to access internet, then the engagement of the learners will be more inside the classroom and their participation and learning will be more. Also, it fosters collaboration, communication and social interchange among students. It also engages learning outside the classroom.

12.But there is no significant difference in the prospective teachers on technology usage during intensive teaching practice with respect to the dimensions instructional Strategies (Skill Integration), classroom management strategies, assignments and instructional materials based on the variable internet usage for students in school.

The reason may be that technology has the power to teach, motivate, captivate and transform a classroom into a training ground but there exists a gap between the vision of delivering personalized, differentiated instruction and the technologies available to make this possible. The prospective teacher tries their best to accomplish the need for personalized learning, but they are not being given the tools they need to accomplish it, or adequate tools simply don't exist in the respective schools.

13.It is inferred from the table that there is significant difference in the willingness of prospective teachers on technology usage during intensive teaching practice with respect to all the variables except the variable internet usage.

The reason may be that internet usage has no influence based on its frequency of usage. From the perception of prospective teachers and the students through interview, it is obvious that both are interested in implementing the 21st century teaching tools such as Google apps, presentations like Powerpoint and Prezi, blogging and flipped classroom. Also, to meet the challenges of globalization, it is necessary to prepare prospective teachers for a workplace where teaching strategies are constantly changing. The teacher should

become one of many resources that the student may learn from, engage students in experiences that challenge previous conceptions of their existing knowledge. For that technology will be the pivotal tool.

5.2. DISCUSSION BASED ON 'F' TEST

14. It is inferred from the table that there is no significant difference in the awareness of prospective teachers on technology usage during intensive teaching practice with respect to all the dimensions based on internet usage. The reason may be though schools mandate the use of a specific technology; teachers are left without the tools (and often skills) to effectively integrate the new capabilities into their teaching methods. The results are that the new investments are underutilized, not used at all, or used in a way that mimics an old process rather than innovating new processes that may be more engaging for students.

CONCLUSION

1. Professional Preparation for teachers on technology needed to be integrated during the preservice training of prospective teachers. Colleges of education should take essential steps to integrate technology in their course. Though ICT is one of the subjects in TNTEU, practical aspect training should be given.
2. The teacher educators should implement 21st century innovative skills for teaching in their classroom and hence the prospective teachers will gain hands on experience on the same. For this the university should conduct workshops for teacher educators on technology tools. Or else, the university should mandate teacher educators to gain certificate from online courses on any of the innovative tools. This may make them to gain practical knowledge in online technology.
3. Integration of technology into education is not easy because it is still difficult for schools to afford enough resources to meet the demands.
4. The physical space of a classroom is one of the most important factors for a successful implementation of technology inside a classroom

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