



Examining the Significance of ICT Integration in Teacher-Education Programme in Ghana

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Abstract

One of the greatest challenges facing teacher education today is preparing quality teachers for an ever-changing and technologically advancing world. This essay, however, advocates for the need of a suitable Information and Communication Technology (ICT) training module and, further evaluate its value in teacher education in Ghana. A questionnaire was designed and administered, and an achievement test was constructed on the use of ICT and the internet for teacher trainees. Interviews were also carried out on the target group and evaluation of the effectiveness of the ICT module was done after 60 days. The finding of the study revealed that there is no significant difference between the awareness level of male and female teacher trainees on ICT and that the majority of teacher trainees are already using ICT to carry out some teaching activities. It was then concluded that the level of awareness of male and female teacher trainees is appreciably equal since there was no significant difference between their levels of awareness and that most teacher trainees are already using ICT gadgets in their teaching schedules. It was therefore recommended among others that the government should assist in the provision of ICT gadgets to aid teacher trainees to deliver their teaching duties to upcoming teachers because the future of this nation depends on their effectiveness and efficiency.

Keywords: *ICT integration, school based assessment, teacher education*



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1.0 Introduction

Teaching is becoming one of the most challenging professions of the information age in Ghana where knowledge is expanding rapidly and much of it is available to students as well teachers at anytime and anywhere. As teacher education is primarily directed towards preparing teachers, the quality of teacher education relies on the teacher trainee's abilities and skills. Teacher educators have to accept the demands of modern world and modify their outmoded concepts and methods according to the needs of learners else the teachers they train will become outdated in the coming future and it will deteriorate the quality of teacher education in the country. Therefore, even though teacher educators may have mastered the traditional pedagogies in teaching their students, the changing world dictates that these are no longer sufficient. The teacher educators must acquire new knowledge of ICT before they can prepare their teacher trainees to meet the demands and challenges of the 21st century. Over the past twenty-five years, the use of ICT has fundamentally changed the practices and procedures in the field of teaching and learning, banking, tourism, share market, engineering, business, and post office. ICT is one of the major contemporary factors shaping and redirecting the global economy and producing rapid changes in society, currently, ICT has become a powerful tool for problem solving, conceptual development and critical thinking that helps to make the learning process much easier for the teacher trainees. New technologies have provided fresh possibilities for the teaching profession. However, teacher educators and teacher trainees have to learn how to use these new technologies in the classroom situations. Most of the teacher education institutions are facing difficulties like shortage of ICT trained qualified teacher educators, weak curricula, lack of ICT equipment etc. Perhaps one of the greatest challenges facing teacher education today concerns the preparation of good quality teachers capable of using ICT effectively. Unless and until they are trained, we cannot expect any qualitative changes in teaching. In this context, the researcher developed an ICT training module and studied its effectiveness in the teacher education system. According to Das (2007) information and communication technology is an important instrument, which can transfer the present isolated, teacher-centered, book-cent red learning environment into a rich student-centered environment. According to Jaiswal (2011) the teacher education system empowered by ICT-driven infrastructure can have a great opportunity to come up to the center stage and ensure academic excellence, quality instruction and leadership in a knowledge-based society. Owing to knowledge explosion and tremendously fast changing ICT, the teachers sometimes find it rather difficult to cope with the new intellectual challenges being thrown up by the changed global and local context, which suggest that there is need to update the knowledge

of ICT in teacher education system. Hence, this study was design to develop a suitable Information and Communication Technology (ICT) training module and evaluate its value in teacher education.

2.0 Literatures review

A number of studies have been undertaken by the researchers in the field of teacher education with ICT. Swamy (2010) undertook a study on Internet awareness and competence among high school students and teachers. He found that the Mahiti Sindhu project had significantly enhanced the awareness of Internet among the teachers who were involved with the project and the training program was able to create awareness regarding Internet competence in the high school students. Muthuchamy (2010) also conducted a study on the higher secondary students' perception towards ICT. He found that students studying in rural and urban schools differed significantly in their perceptions towards ICT. Goel (2006) conducted a study on the use of Internet in teacher education and found that a sizeable number of teacher trainees make use of Internet for email, surfing and research.

3.0 Methodology

All 25 teacher trainees of the Mathematics/ICT Department of Dambai College of Education were selected for the study. An instructional ICT training module was developed for the teacher trainees. The duration of the program was 60 days, including follow-up measures like group activities, cybercafé visits, and display flow charts on the components of ICT related to teacher education. Teacher trainees were trained to a) Prepare power point slides in their subject's areas, b) Use power point slides and projector for teaching various topics in the subjects, c) Use Internet for chatting, email and video conferencing, d) Browse the related research literature through Internet and e) prepare graphs by using. They were also given theoretical and practical exposure in the above-mentioned area Microsoft-Excel s. A single group design was employed for the present study. A questionnaire and achievement test were constructed on the use of ICT and Internet for teacher trainees. An interview schedule was used to interview the target group. An evaluation of the effectiveness of ICT module was done after 60 days. For analysis of data, the researcher used the test of significance of the difference between means and percentage analysis.

4.0 Analysis and Interpretation of Data

H₀ There is no significant difference in level of awareness of male and female teachers' trainee

H₁ There is significant difference in level of awareness of male and female teachers' trainee

Table 1, Comparison of Scores on Level of Awareness about ICT

Variables	Number N	Mean M	Pooled SD	SE _D	t	Significance
Male Teacher Trainees	13	7	1.817	0.727	1.375	No Significance

From the table 1, the value of t with 23 degrees of freedom at 0.05 level of significance is 1.37 which is quite smaller than the table value 1.817. Hence, the null hypothesis (H₀) is accepted at 0.05 level of significance, which implies that there is no significant difference in level of awareness of male and female teachers' trainee.

Table 2 the Use of ICT in Teacher Education Program

S.No.	Questions	Before Training Section Frequency		After Training Section Frequency					
		Yes No.	%	No No.	%	Yes No.	No No.		
1	Have you created your own email account?	05	(20%)	20	(80%)	25	(100%)	00	(0%)
2	Do you know search engines?	09	(36%)	16	(64%)	25	(100%)	00	(0%)
3	Are you chatting on internet?	04	(16%)	21	(84%)	10	(40%)	15	(60%)
4	Do you know how to make power point slides for presentation?	06	(24%)	19	(76%)	18	(72%)	07	(28%)
5	Do you browse the research literature through internet?	03	(12%)	22	(88%)	16	(64%)	09	(36%)
6	Can you prepare graphs by using MS Excel?	05	(20%)	20	(80%)	10	(40%)	15	(60%)
7	Have you used LCD projector for lesson plan and delivery?	03	(12%)	22	(88%)	20	(80%)	05	(20%)

From Table 2, it is observed that significant changes were found after implementing ICT training module by the teacher trainees in the teacher education programmer.

100% of the teacher trainees were found to have created their email account and know about different search engines. Teacher trainees also started making PowerPoint presentations and using the projector. 40% of teacher trainees can now use MS-Excel to collate School Based Assessment (SBA) records and reports of the pupils during Off – Campus section of the Diploma programme.

Table 3, Extent of Internet Used by the Teacher Trainees

S.No.	Place	Before Training Section		After Training Section	
		Frequency	No. %	Frequency	No. %
1	Home	04 (16%)		07(28%)	
2	College	03 (12%)		12(48%)	
3	Cyber Café	11 (44%)		06(24%)	
4	Nowhere		07 (28%)		00(00%)
	Total		25 (100)		25 (100)

It is evident from Table 3 that 28 % of the teacher trainees do surfing at Home, 48 % at university and 20% at cyber café. A large majority of the teacher trainees use Internet at the college.

Table 4 Time Spent on Internet per Week

S.No.	Time	Before Training Section	After Training Section
		Frequency	Frequency
1	0 hour	07 (28%)	00 (00%)
2	1 hour	02 (08%)	01 (04%)
3	1-2 hours	04 (16%)	03 (12%)
4	3-4 hours	07 (28%)	10 (40%)
5	5-7 hours	04 (16%)	08 (32%)
6	More than 8 hours	01 (04%)	03 (12%)
	Total	25 (100%)	25 (100%)

From the above table it is clear that 40 % teacher trainees used the Internet for 3- 4 hours per week, 32 % used it for 5-7 hours per week while 12 % used it for more than 8 hours. All teacher trainees used Internet for at least one hour a day after completing ICT training module.

Table 5 the Use of ICT for Lesson Planning and Delivery

S.No.	Use	Before Training Section Frequency	After Training Section Frequency
1	Often	03 (12%)	17 (68%)
2	Sometimes	02 (08%)	05 (20%)
3	Occasionally	01 (04%)	03 (12%)
4	Never	19 (76%)	00 (00%)
	Total	25 (100%)	25(100%)

From Table 5 it can be observed that 68 % of the trainees use ICT often for lesson planning and delivery. This shows that training in the use of ICT plays a major role in enabling teachers to use and adopt technology in day-today teaching/learning process.

Table 6 Use of E-mail

S.No.	Time	Before Training Section Frequency	After Training Section Frequency
1	Rarely	12 (48%)	00 (00%)
2	Often	06 (24%)	25 (100%)
3	Never	07 (28%)	00 (00%)
	Total	25 (100%)	25(100%)

From table 6 it can be seen that significant changes were found in the trainees email habits. 100% trainees were found to check their email regularly after undergoing ICT training module.

5.0 Conclusion

One of the greatest challenges facing teacher education today is preparing good quality teachers for an ever-changing world. Therefore, the study was designed to develop a suitable Information and Communication Technology (ICT) training module and evaluate its value in teacher education. From the analysis carried out on data collected, the following conclusions were drawn one, no substantial differences were found to exist between ICT awareness of male and female teacher trainees. After implementing the ICT training module, significant changes were found among teacher trainees. A large number of trainees were found to use ICT tools and Internet for their lessons, assignments, and review of related literature in their action research works. A sizeable number of the trainees (about 40%) use Internet for 3- 4 hours per week, 32% of them use it for 5-7 hours per week and 12% of them use the

Internet for more than 8 hours in a week, 68% of the trainees were found to use ICT for planning and delivering lessons. Significant changes were also found among teacher trainees in using emails. All teacher trainees were found to check their email regularly and they started submission of assignments and research work via email

6.0 Recommendation

Based on conclusions above and discussion with some stakeholders of Dambai College Education, the following recommendation can be drawn for policy makers:

- i. Government and Managements should support teacher education institutions and colleges by giving more financial assistance to buy ICT equipment.
- ii. Printed ICT based practice lesson books along with specific instructions for teacher trainees need to be developed.
- iii. All Colleges of Education need to establish well-resourced computer labs with Internet facilities.
- iv. Creation and dissemination of information by web-based education. It is really a challenging task to strengthen ICT in teacher education.

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