Study of ICT Competency and Professional Interest of Student-Teachers

Dr. Babita Bhardwaj*

Abstract:

This study was undertaken to explore the relationship between ICT Competency and Professional Interest of B.Ed. student teachers. The sample of 401 B.Ed. student teachers was selected from four universities situated in Delhi and National Capital Region. An ICT competency test and Professional Interest Inventory were developed, validated, and used for the study. The high, medium, and low ICT groups were compared in terms of Professional Interest. It is inferred that student teachers of high ICT group and medium ICT group performed better in professional interest than student teachers of low ICT group and significant positive correlation exists between ICT competency and professional interest of male as well as female student teachers.

Keywords: *ICT Competency, Student Teachers, Professional Interest, Low, Medium and High ICT* .

Abbreviations Used: *B.Ed.- Bachelor of Education; NCR- National Capital Region; ANOVA -Analysis of Variance; JMIU- Jamia Millia Islamia University (Delhi); GGSIPU- Guru Gobind Singh Indra Prastha University (Delhi); MDU- Maharshi Dayanand University (Rohtak); CCSU- Chaudhary Charan Singh University (Meerut)*

1. Introduction:

Teaching as a profession is becoming more challenging with the advent of new e-learning platforms. At the wake of this technological and educational advancement, the teachers are required to promote learning and make it relevant to individual learners rather than simply presenting information and competencies. Modern technological advances have created new opportunities for teaching careers, but at the same time they have put more demands on teachers to learn how to use these new technologies in their teachings. These challenges ask teachers to continuously refrain themselves and acquire new knowledge and skills while maintaining their jobs. (Sagar, 2005, pp 181-198)[1]

2. Objectives of the Study:

i) To study the effect of ICT competency on Professional interest of B.Ed. student teachers.

ii) To ascertain the relationship between ICT competency and professional interest of B.Ed. student teachers.

*Asst. Professor, Army Institute of Education, Affiliated to Guru Gobind Singh Indra Prastha University, Delhi

[1]Sagar, K. (2005). *ICT and Teacher Training.* Delhi, India: Tarun Offset (pp 181-198).

3. Review of Related Literature:

Riddell, et al (2005)[2], in a research report of the gender balance in Scottish publicly funded schools, revealed that teaching is female dominated profession. Ravi Chandran, Merlin Sasikala and George (2009)[3] investigated attitude of teachers towards web- based learning in the study and revealed that both male and female teachers have a positive attitude towards web-based learning. The government and unaided school teachers have more favourable attitude than aided school teachers. Mehra, and Newa (2009)[4] conducted a study to investigate the attitude of information and communication technology of 300 schools' teachers of secondary school of Nepal. It was concluded that teachers belonging to different academic streams, viz. language, science/mathematics and social science exhibited comparable attitude towards ICT. Farhat (2009)[5] studied the impact of technology on teaching and learning in high schools in the United Arab Emirates. Majority of teachers had agreed that ICT affected the planning of teaching regarding course preparation; nevertheless, there was a mismatch between policy and implementation.

4. Definitions of the Terms Used:

4.1 Information and Communication Technology (ICT) :"It is the technology required for information processing. It involves the use of computers, computer software and other devices to convert, store and process, transmit and retrieve information and includes the services and applications associated with them." (Mallik, 2005)[6]

4.2 Competency: Competencies are the skills and personal characteristics that contribute to superior performance. (Cripe, E. et.al, 2002)[7].

4.3 Profession: A profession is an occupation based on specific theories of knowledge and skill development, having a provision for systematic training and a type of licensing system (Mohanty, 2002)[8].

4.4 Interest : According to Crow and Crow (1979)[9], "Interest may refer to the motivation force that impels as to attend to a person, thing or an activity or it may be the effective experience that has been

---

[2]Riddell, S., Tett., Ducklin, A, Stafford, A., Winderton, M., & Burns, C.(2005). A research report of the gender balance in Scottish publicly funded schools, the underlying reasons for the growing imbalance and possible courses of action which might be taken to ensure greater diversity among the teaching workforce. Retrieved from Scottish government website http://www.scotland.govt.uk/publications/

[3]Ravi Chandran, T., Merlin Sasikala, J.E. & George, M. (2009). Attitude of school teachers towards web-based learning. *Edutracks*, 8 (11), 30-33

[4]Mehra, V., and Newa, D. (2009). School teachers' attitude towards Information and Communication Technology. *Edutracks.* Vol. 8(6), 25-36

[5]Farhat, N. (2009). "The Impact of Technology on Teaching and Learning in High Schools in the United Arab Emirates." Ph.D. Thesis submitted, University of Leicester.

[6] Mallik, U. (2005). *Sceptical Essays.* New Delhi, India: Franc Bros.

[7]Cripe, E. and Mansfield, R. (2004).*The Value-Added Employee.* New York, NY : Taylor & Francis.

[8]Mohanty, S.B. (2002). Teaching as a Profession. *University News,* 40(38), 1

[9]Crow, L. D. & Crow, A. (1979). *Educational Psychology*. New Delhi, India: Eurasia Publishing House (Pvt). Ltd.

stimulated by the activity itself. In other words, interest can be the cause of an activity and the results of participation in the activity"

4.5Operational Definitions of the Terms Used: Operational definitions of the terms are used in development of ICT Competency Test and Professional Interest Inventory.

4.5.1 Information and Communication Technology (ICT) Competency: ICT competency is a competency as expressed in terms of scores obtained by student teachers in ICT competency test prepared by the researcher.

4.5.2 Professional Interest : It is the interest in the teaching profession as expressed in terms of the scores obtained in professional interest inventory developed by the researcher.

4.5.3 B.Ed. student teachers : Students pursuing Bachelor of Education Course are known as B. Ed. student teachers.

5. Method:

5.1 Population: The study was done on B.Ed. students of Delhi and National Capital Region (NCR) which includes few districts of three neighboring states of Delhi, capital of India.

5.2 Design of Sample: The Sample of 401 student teachers for the present study was drawn from four universities from Delhi and National Capital Region (NCR). A sample of 171 student teachers was taken from Delhi and 230 student teachers from NCR. 300 student teachers belonged to the arts stream whereas 101 student teachers belonged to science stream.

Table-1: Gender wise distribution of the sample

University	Male	Female	Total
JMIU	25	45	70
GGSIPU	07	94	101
MDU	45	65	110
CCSU	25	95	120
TOTAL	102	299	401

Table-2: Stream wise distribution of the sample:

University	Stream		Total
	Arts	Science	
JMIU	57	13	70
GGSIPU	52	49	101
MDU	101	09	110
CCSU	90	30	120
Total	300	101	401

5.3 Tools :

5.3.1 ICT Competency Test for B.Ed. Student Teachers :

An ICT competency test for B.Ed. student teachers was developed. It had 50 multiple choice test items. The ICT Competency test was validated with a standardized Educational Technology Test.

The coefficient of validity was found to be 0.64877. Test retest and split half reliability obtained was 0.768974 and 0.81 respectively.

Table- 3: Details of High, Medium and Low ICT Competency Groups

Group	Frequency	Per cent
Low ICT	76	19.0
Medium ICT	240	59.9
High ICT	85	21.2
Total	401	100

5.3.2 Professional Interest Inventory:

A professional interest inventory for B.Ed. student teachers was developed. It contains thirty statements covering five dimensions. Professional Interest Inventory record was validated with Pramod Kumar and Prof. D. N. Mutha's Teacher Effectiveness Scale. The coefficient of validity was found to be 0.76. Test retest and split half reliability obtained was 0.87 and 0.68respectively. Three-point rating scale was used viz. Yes, Uncertain and No. Two marks for correct statement, one mark for uncertain statement and zero for incorrect statement were assigned.

5.4 Statistical Techniques used in Analyzing the Data:

To analyze and interpret the data of the present study, the investigator made use of analysis of variance (ANOVA), T-test, Scheffe test and Pearson Correlation Coefficient.

6. Analysis and Interpretation of Data:

6.1 Effect of ICT Competency on Professional Interest:

6.1.1 Objective-1 : To study the effect of ICT competency on Professional Interest of B.Ed. student teachers.

In order to study the effect of ICT Competency on Professional Interest, low and medium, low and high and high and medium ICT groups were compared in terms of professional interest.

Hypothesis -1 There is no significant difference between the professional interests of different ICT groups.

For determining the significance difference between the mean scores of ICT competency and professional interest one-way ANOVA was applied. F ratio of different ICT groups in terms of professional interest is given as under:

Table-4 : F Ratio of Low ICT, Medium ICT andHigh ICT Groups in Terms of Professional Interest

	Sum of Squares	Mean Squares	F	Sig.
Between Groups	1885.248	942.624	8.164	0.000*
Within Groups	45950.787	115.454		
Total	47836.035			

Note: Level of significance at 0.05 level, df = 2,398

Table result shows that F =8.164 and p=.000 which is less than 0.05. It is evident that professional interest of low ICT, medium ICT and high ICT groups differ significantly. Therefore, null hypothesis is rejected.

As it has been seen that three groups differ significantly at 5% level of significance on Professional Interest scores, therefore Scheffe multiple comparison tests have been used to see which one pair of the three groups differ significantly. The results of Scheffe test are given below in table 3.

Table - 5: Comparison of Different Pairs of ICT Groups in Terms of Professional Interest:

ICT Group	N	Mean	SD	Mean difference	't'-value	Significance
Low ICT Medium ICT	76 240	67.43 71.58	9.79 11.21	-4.14	- 2.89*	0.004
Low ICT High ICT	76 85	67.43 74.24	9.79 10.19	-6.80	- 4.306*	0.000
Medium ICT High ICT	240 85	71.58 74.24	11.21 10.19	-2.66	-1.923	0.055

Interpretation:

It is evident from Scheffe multiple comparison test that two pairs of ICT groups are significantly different, and one ICT groups is not significantly different in terms of professional interest.

- Difference between Low ICT and Medium ICT Groups in Terms of Professional Interest: The table result shows that p value is 0.004 which is significant at 0.05 level of significance. It is revealed that professional interest of low ICT and medium ICT groups is significantly different. It is inferred that student teachers of medium ICT group performed better in professional interest than student teachers of low ICT group.

- Difference betweenLow ICT and High ICT Group in Terms of Professional Interest:
  The table result shows that p value is 0.000 which is significant at 0.05 level of significance. It is revealed that professional interest of low ICT and high ICT groups is significantly different. It is inferred that student teachers of high ICT group performed better in professional interest than student teachers of low ICT group.

- Difference betweenMedium ICT and High ICT Groups in Terms of Professional Interest: The table result shows that p value is 0.055 which is not significant at 0.05 level of significance. It is revealed that professional interest of medium ICT and high ICT groups is not significantly different.

6.2 Correlation Coefficient:

Correlation Coefficient was calculated to find out relationship of ICT Competency with professional interest of B.Ed. student teachers.

6.2.1 Objective-2: To ascertain the relationship between ICT competency and professional interest.In order to analyze the data for studying the above objective the following hypothesis was formulated:

*Hypothesis -2 :*There is no significant relationship between the ICT competency and professional interest of male and female B.Ed. student teachers.

Table- 6: Correlation between ICT competency and Professional Interest of Male and Female Student Teachers

(Dependent variable- ICT competency):

Variables	Male (n=102)	Female (n=299)	Total (N=401)
competency and Professional Interest	0.251*	0.276*	0.164*

*Note: * Significant at 0.05 level.*

- The value of coefficient of correlation between ICT competency and achievement in professional interest of male student teachers (n-102) is 0.251 and p value is 0.006 which is less than 0.05. Hence the obtained correlation is significant at 0.05 level of significance. This shows that there is significant positive correlation between ICT competency and achievement of male student teachers in professional interest. Positive correlation indicates that as ICT competency of male student teachers increases their achievement in professional interest also increases or vice-versa.

- The value of coefficient of correlation between ICT competency and achievement in professional interest of female student teachers (n-299) is 0.276 and p value is 0.000 which is less than 0.05. Hence the obtained correlation is significant at 0.05 level of significance. This shows that there is significant positive correlation between ICT competency and achievement of female student teachers in professional interest. Positive correlation indicates that as ICT competency of female student teachers increases their achievement in professional interest also increases or vice-versa.

7. Discussion and Conclusion:

In the present research study nearly 75% of the participants were female and another 25% were male student teachers. Result showed that males were not attracted to the teaching profession as compared to females. Teaching is indeed highly female oriented profession, both historically and currently. The social attitudes towards teachers have been shaped by the ideology of the male breadwinner. Being breadwinners, the males are forced to look for higher paying jobs. (Ridell et. al, 2005)[10]. The study also revealed that nearly 60% future teachers possess medium ICT competency, 19% student teachers possess low ICT competency and 21% student teachers possess high ICT competency.

7.1 Major Findings of the Study:

All research questions were analyzed at 0.05 level of significance. The major findings of the research questions of the present study were as follows:

i. Professional interest of low ICT and medium ICT groups is significantly different. It is inferred that student teachers of medium ICT group performed better in professional interest than student teachers of low ICT group.

[10]Ibid, p-...

ii. Professional interest of low ICT and high ICT groups is significantly different. It is inferred that student teachers of high ICT group performed better in professional interest than student teachers of low ICT group.

iii. There is no significant difference between the mean scores of ICT competency of male and female student teachers.

iv. There is significant positive correlation between ICT competency and achievement of male and female student teachers in professional interest. Positive correlation indicates that as ICT competency of male and female student teachers' increases, their achievement in professional interest also increases or vice-versa.

The results are in support of Ravichandran et. al's (2009)[11] findings in which they stated that male and female have positive attitude towards web-based learning.

7.2 Recommendations:

The social, economic, and technical developments of the past decades have made education and training more important than ever before. Therefore, it is important to realize that teachers are indispensable for good learning about ICTs, and to research and teach ICTs to improve the quality of education. Some of the recommendations of the study are as follows:

i. Institutions for teacher education should provide in–service training on ICT and ICT integration in order to enhance the skill level of teacher educators and to increase the level of ICT integration to instruction.

ii. Teacher education institutions should provide the necessary infrastructure, technical support, proper leadership, time, and promote access to available facilities to encourage teachers to integrate ICTs to instruction.

iii. Teacher educators should be encouraged to model and integrate ICTs to instruction to serve as models to the pre-service teachers who would most probably adopt their pedagogies in their future classrooms.

Bibliography:

- Behera, L. and Raul, S.K. (2004). Performance of B.Ed. Teacher Trainees in Relation to their gender, academic background and type of institution. *The Educational Review*,47(11), 6-11
- Cripe, E. and Mansfield, R. (2004).*The Value-Added Employee.* New York, NY : Taylor & Francis.
- Crow, L. D. & Crow, A. (1979). *Educational Psychology*. New Delhi, India: Eurasia Publishing House (Pvt). Ltd.
- Farhat, N. (2009). "The Impact of Technology on Teaching and Learning in High Schools in the United Arab Emirates." Ph.D. Thesis submitted, University of Leicester.
- Kumar, A. (1986). *Test Measurements and Research Methods in Behavioural Sciences.* New Delhi, India: Tata McGraw-Hill Publishing Limited.
- Kumar, P. , and Mutha, D.N. (2006).*Teacher Effectiveness Scale*. Agra, India: Agra Psychological Cell.
- Mallik, U. (2005). *Sceptical Essays.* New Delhi, India: Franc Bros.
- Mallik, U. (2002). *Learning with computers.* New Delhi, India: NCERT.

[11]Ibid, p- …

- Mehra, V., and Newa, D. (2009). School teachers' attitude towards Information and Communication Technology. *Edutracks.* Vol. 8(6), 25-36
- Mohanty, S.B. (2002). Teaching as a Profession. *University News,* 40(38), 1
- NCERT, (2005). National curriculum Framework, New Delhi: NCERT.
- NCTE (1998). *Curriculum Framework for Quality Teacher Education*. New Delhi, India: NCTE.
- Ravi Chandran, T., Merlin Sasikala, J.E. & George, M. (2009). Attitude of school teachers towards web-based learning. *Edutracks*, 8 (11), 30-33
- Riddell, S., Tett., Ducklin, A, Stafford, A., Winderton, M., & Burns, C.(2005). A research report of the gender balance in Scottish publicly funded schools, the underlying reasons for the growing imbalance and possible courses of action which might be taken to ensure greater diversity among the teaching workforce. Retrieved from Scottish government website http://www.scotland.govt.uk/publications/
- Sagar, K. (2005). *ICT and Teacher Training.* Delhi, India: Tarun Offset (pp 181-198).