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COMPARATIVE STUDY OF ATTITUDE OF HUMANITIES AND SCIENCE TEACHERS TOWARDS INFORMATION AND COMMUNICATION TECHNOLOGY

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Abstract:

In the era of 21st century, there has been exponential growth in the use of Information and Communication Technology (ICT) and it has become a vital tool of socio-economic and education change. Successful integration of ICT tools in the college system depends largely on the competence and on the attitude of teachers towards the role of modern technologies in teaching and learning. The positive attitude of teachers toward technology and self efficacy with computers are important prerequisites to helping others learn about computers and to successfully integrating technology into the classroom. Hence the present article discusses the comparative attitude of Science and Humanities teachers towards ICT with respect to gender, age and teaching experience.

Key Words: Information and Communication Technology, Teacher Education, Teacher Attitude & Pedagogical Methods

Introduction:

ICT (information and communications technology - or technologies) is an umbrella term that includes any communication device or application, encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as the various services and applications associated with them, such as video-conferencing and distance learning (Moursund and Bielefeldt, 1999). Globalization and technological change processes have created a new global economy "powered by technology, fuelled by information and driven by knowledge". Information and Communication Technology (ICT) occupies a complex position in relation to globalization. The emergence of this new global economy has serious implications for the nature and purpose of educational institutions (Gaible, 2009).

ICT in higher education are being used for developing course material; delivering content and sharing content; communication between learners, teachers and the outside world; creation and delivery of presentations and lectures; academic research; administrative support, student enrolment. Therefore, it can be considered that Information and Communication Technology Mediated Collaborative Learning (ICML) is one of the most promising innovative pedagogical practices at present to build a classroom culture supportive of active knowledge construction that can transform individual learning to the group level mediated by ICT. In developing countries in particular, the above promises have generated a whole set of wild speculations about the necessity of educational reforms that will accommodate the new tools (Pelgrum, 2001). Today, India actively promotes the use of ICT in education sector, the country's decision-makers, at both the central and state levels. A key element seems to be left out in application of ICT tools is attitudes of university teachers as the end-users and the real agents of change within the classroom arena (Reddi and Sinha, 2003). Regardless of the amount of technology and its sophistication, technology will not be used unless faculty members have the skills, knowledge and attitudes necessary to infuse it into the curriculum. For teachers, research has shown that positive attitudes toward technology and self efficacy with computers are important prerequisites to helping others learn about computers (Zhang and Espinosa, 1998) and to successfully integrating technology into the classroom (Tsitouridou and Vryzas, 2004). In fact, Wenzlaff (1998) posits that teachers' attitudes are among a handful of factors that determine the formal and informal curriculum in the classroom. Further, if teachers do not confront these attitudes and beliefs, they remain steadfast even when change abounds.

In 1999, Ertmer distinguished between two types of barriers that impacted teacher's uses of technology in the classroom. First-order barriers were defined as those that were external to the teacher and included resources (both hardware and software), training, and support. Second-order barriers included those that were internal to the teacher and included teacher's confidence, beliefs about how students learned, as well as the perceived value of technology to the teaching/learning process. Multiple researchers have found that the second-order barriers are the most challenging for teachers (Dexter and Anderson, 2002; Ertmer, 1999; Zhao, et al 2002). Studies have established that gender also has a mediating effect on attitudes and perceptions towards ICT (Mitra, et al. 2000, Margolis and Fisher, 2002, Koohang, 1987).

Therefore, it can be considered that ICT's is one of the most promising innovative pedagogical practices at present in promoting more learner centred and interactive learning, but no amount of technological up gradation of educational institutions will change the performance of our students without the active involvement and support of teachers who are capable of exploiting the profound possibilities that ICT can offer for the teaching learning process.

Objectives of the Study:

Given the importance of teacher's attitudes and the relationship of teacher's attitudes to the above variables, the purpose of this study was therefore to determine the college teacher's attitudes toward ICT in Indian education and then to explore the relationship between teacher's attitudes and factors that are thought to be influencing them, including perceived computer attributes, perceived computer competence, and perceived computer access. Teacher's personal characteristics (gender, age, teaching experience, stream, and teaching methods as well as computer training background) were also included in order to ensure maximum possible control of extraneous variables by building them into the design of the study. More specifically, the study investigated the following questions:

- ✓ What are the attitudes of college teachers in Sciences and Humanities toward ICT in education?
- ✓ What are the teacher's perceptions of:
  - Computer attributes?
  - Their level of computer competence?
  - Their level of access to computers?
- ✓ What are the proportion of the variance in the attitudes of teachers toward ICT in education that can be explained by the selected independent variables (as well as teacher's personal characteristics) and the relative significance of each independent variable in explaining the dependent variable?

To address these questions the study was taken up with the following objectives:

- ✓ To compare the attitude of Humanities and Science teachers towards information technology.
- ✓ To compare the attitude of Humanities and Science teachers towards information technology with respect to gender.
- ✓ To compare the attitude of Humanities and Science teachers towards information technology with respect to age.
- ✓ To compare the attitude of Humanities and Science teachers towards information technology with respect to experience.

Hypotheses of the Study:

In the view of the above stated objectives, the following null hypotheses were formulated:

- ✓ There will be no significant difference between Humanities and Science teachers.
- ✓ There will be no significant difference between Humanities and Science teachers with respect to gender.
- ✓ There will be no significant difference between Humanities and Science teachers with respect to age.
- ✓ There will be no significant difference between Humanities and Science teachers with respect to experience.

Methodology of the Study:

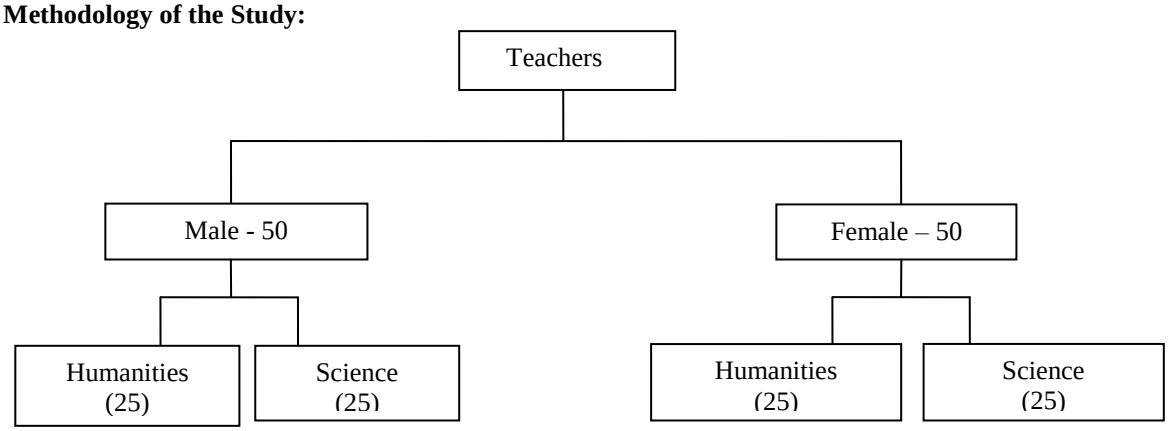

Figure 1: Diagrammatic representation of design scheme of the study. Number of the participants from each group is shown in parentheses

100 Teachers (50 Science and 50 Humanities) of the ten colleges which are affiliated under Eternal University, Sirmour, Himachal Pradesh, constituted the whole population of the present study by employing the stratified random sampling technique. Attitude Scale towards Information Technology for Teachers by Dr. (Mrs.) Nasrin and Dr. (Mrs) Fatima Islahi, Aligarh (2012) has been used as a tool which has 30 positively and negatively ordered items in English language as the subjects under study are of well educated class and are comfortable with English language. The items are related to the use of computer and internet for various teaching purposes

employable by teachers in different streams *viz.* use of information technology for better access to information, use of computers in classrooms for better interactive and mind stimulating activities, etc. The reliability of the tool was found to be 0.89 (N=50) by Split-Half method. Then, by applying t-test method, the present investigator analyzed the collected information and concluded the result.

Justification of the Study:

The rapid advancement in Information and Communication Technology (ICT) has profoundly influenced to the teaching learning process. Integration of ICT in classroom helps to create an environment for students' activities that lead to meaningful and sustainable learning experiences (K.S. Singh 2012). This integration supports students in their constructive thinking and allows them to transcend their cognitive limitations. In most cases, the teacher is key to effective implementation of the use of computers in the educational system and given that teachers have tremendous potential to transmit beliefs and values to students, it is important to understand the biases and stereotypes that teachers may hold about the use of computers and the factors that act as facilitators to teachers' positive computer usage. In support of the importance of teachers' attitude towards computer use, Zhao, et al (2001) provided evidence to suggest that the attitudes of teachers are directly related to computer use in the classroom. The success of student learning with computer technology will depend largely on the attitudes of teachers, and their willingness to embrace the technology (Teo, 2006). Gaining an appreciation of the teachers' attitudes towards computer use may provide useful insights into technology integration and acceptance and usage of technology in teaching and learning. Attitude, in turn, constitutes various dimensions. Some examples of these are perceived usefulness, computer confidence (Rovai & Childress, 2002), training (Tsitouridou & Vryzas, 2003), gender (Sadik, 2006), knowledge about computers (Yuen, et al, 1999), anxiety, age, experience, confidence, and liking (Yildirim, 2000). Hence keeping in view the above mentioned factors and on the part of teacher educators, the present study will help to understand the dimensions that influence College teacher's attitudes towards computers as a means for effective development of teacher training curriculum that will prepare teachers to face the challenges in the information age.

Results and Discussion:

Table 1: Significance of Difference in the Mean Attitude Scores of Humanities and Science Teachers towards ICT

Group	N	Mean	S.D.	SE_D.	t- ratio	Level of significance
Humanities Teachers	50	112.84	18.99	3.79	0.90	Not significant at 0.05 and 0.01 level
Science Teachers	50	116.26	18.96			

The table 1 shows that the calculated t-ratio is 0.90, is less than the tabulated value at 0.05 as well as 0.01 levels of confidence hence is not significant at both the levels of confidence. This shows that there exists no significant difference in the mean scores of the Humanities and Science Teachers. Hence Hypothesis – 1 "There will be no significant difference between Humanities and Science teachers" is accepted.

Table 2: Significance of Difference in the Mean Attitude Scores of Humanities and Science Teachers towards ICT with respect to gender

Group		N	Mean	S.D.	SE_D.	t- ratio	Level of Significance
Group I	Humanities Teachers (Male)	25	111.32	22.95	5.85	1.34	Not significant at 0.05 and 0.01 level
	Science Teachers (Female)	25	119.16	18.20			
Group II	Humanities Teachers (Female)	25	114.36	14.31	4.78	0.20	Not significant at 0.05 and 0.01 level
	Science Teachers (Male)	25	113.36	19.17			
Group III	Humanities Teachers (Male)	25	111.32	22.95	5.97	0.34	Not significant at 0.05 and 0.01 level
	Science Teachers (Male)	25	113.36	19.17			
Group IV	Humanities Teachers (Female)	25	114.36	14.31	4.63	1.03	Not significant at 0.05 and 0.01 level
	Science Teachers (Female)	25	119.16	18.20			

The above table shows difference in mean score of Science and Humanities teachers with respect to gender differences. The comparison was studied in four groups and is presented in table 2. The data indicate that there is no significant difference exists in all the four groups with respect to gender as in all the groups the calculated t-value (1.34, 0.20, 0.34 and 1.03) was found lower than the tabulated value at 0.05 as well as 0.01 levels of confidence. Hence Hypothesis –2 "There will be no significant difference between Humanities and Science teachers with respect to gender" is accepted.

Table 3: Significance of Difference in the Mean Attitude Scores of Humanities and Science Teachers towards ICT with respect to age

Group		N	Mean	S.D.	SE_D.	t- ratio	Level of significance
Group I	Humanities Teachers (above 35 years)	25	104.44	17.51	4.21	4.32	Significant at 0.05 as well as 0.01 level
	Science Teachers (below 35 years)	25	122.64	11.76			
Group II	Humanities Teachers	25	121.24	16.83	5.57	2.03	Significant at 0.05 but

	(below 35 years)						non-significant at 0.01 level
	Science Teachers (above 35 years)	25	109.88	22.20			
Group III	Humanities Teachers (above 35 years)	25	104.44	17.51	5.65	0.96	Not significant at 0.05 and 0.01 level
	Science Teachers (above 35 years)	25	109.88	22.20			
Group IV	Humanities Teachers (below 35 years)	25	121.24	16.83	4.10	0.34	Not significant at 0.05 and 0.01 level
	Science Teachers (below 35 years)	25	122.64	11.76			

Data presented in table 3 indicate the difference in mean score of Humanities and Science teachers with respect to the age of the subjects. For the present objective, Humanities and Science teachers were divided into two groups, one group contained the 25 teachers from both streams with age less than 35 years and similarly second group also contained the 25 teachers from both the streams with age more than 35 years. With this classification, the present objective was studied. From the table 3 it is evident that the there exists significant difference in the mean score of group I i.e. between Humanities teachers (above 35 years) and Science teachers (below 35 years) and group II i.e. between Humanities teachers (below 35 years) and Science teachers (above 35 years) at 0.05 level of confidence but non-significant at 0.01 level of confidence. While the differences in the group III and IV were found not significant at both 0.01 and 0.05 level of confidence. Hence the results indicate that the hypothesis 3 is supported partially on the basis of effects among the variable age.

Table 4: Significance of Difference in the Mean Attitude Scores of Humanities and Science Teachers towards ICT with respect to experience

Group		**N**	**Mean**	**S.D.**	**$SE_{D.}$**	**t- ratio**	**Level of Significance**
Group I	Humanities Teachers (above 10 years experience)	25	105.84	17.02	4.27	4.3	Significant at 0.05 and 0.01 level
	Science Teachers (below 10 years experience)	25	124.2	12.98			
Group II	Humanities Teachers (below 10 years experience)	25	119.84	18.57	5.51	2.09	Significant at 0.05 but non-significant at 0.01 level
	Science Teachers (above 10 years experience)	25	108.32	20.41			
Group III	Humanities Teachers (above 10 years experience)	25	105.84	17.02	5.31	0.46	Not significant at 0.05 and 0.01 level
	Science Teachers (above 10 years experience)	25	108.32	20.41			
Group IV	Humanities Teachers (below 10 years experience)	25	119.84	18.57	4.53	0.96	Not significant at 0.05 and 0.01 level
	Science Teachers (below 10 years experience)	25	124.2	12.98			

Data presented in table 4 indicate the difference in mean score of Humanities and Science teachers with respect to the teaching experience of the subjects. For the present objective, Humanities and Science teachers were divided into two groups, one group contained the 25 teachers from both streams with experience in teaching above 10 years and similarly second group also contained the 25 teachers from both the streams with experience in teaching below 10 years. With this classification, the present objective was studied. From the table 4 it is evident that the there exists significant difference in the mean score of group I i.e. between Humanities teachers (experience above 10 years) and Science teachers (experience above 10 years) at 0.01 as well as at 0.05 level of confidence while in group II i.e. between Humanities teachers (experience below 10 years) and Science teachers (experience above 10 years) difference was significant at 0.05 level of confidence but non-significant at 0.01 level of confidence. While the differences in the group III and IV was found not significant at both 0.01 and 0.05 level of confidence. Hence the results indicate that the hypothesis 4 is supported partially on the basis of effects among the variable experience.

From this analysis of the collected data, the study can be concluded with the following findings as follows:

- ✓ There is no significant difference between the mean scores of the Humanities and Science Teachers towards ICT as because the total mean score of the Science teachers is non-significantly greater than the mean score of Humanities teachers. Hence it can be concluded that the Science Teachers have non-significantly higher positive attitude towards the use of ICT in teaching than the Humanities Teachers.

- ✓ There is no significant difference between Humanities and Science teachers with respect to gender while it was observed that the Science Teachers (female) have non-significantly higher positive attitude towards the ICT than the Humanities Teachers (male and female).
- ✓ The results of comparison of attitude of humanities and Science teachers with respect to age indicates the partial support for the main hypothesis with respect to overall model as it was observed that Science Teachers (below 35 years age) have significantly higher positive attitude towards the ICT than the Humanities Teachers (above 35 years age) whereas The Humanities teachers (below 35 years) have significantly higher positive attitude towards the Information and technology than the Science teachers (above 35 years). While the other two groups showed non-significant differences.
- ✓ The results of comparison of attitude of humanities and Science teachers with respect to teaching experience indicates the partial support for the main hypothesis with respect to overall model as it was observed that Science Teachers (below 10 years experience) have significantly higher positive attitude towards the ICT than the Humanities Teachers (above 10 years experience) whereas the Humanities teachers (above 10 years experience) have significantly higher positive attitude towards the Information and technology than the Science teachers (below 10 years experience). While the other two groups showed non-significant differences.

Delimitations:

- ✓ The study was confined to 100 teachers only.
- ✓ The study was delimited to Sirmour district of Himachal Pradesh only.
- ✓ The study was restricted to Humanities and Science teachers only.
- ✓ The study delimited to age, gender and teaching experience only.

Suggestions for further Study:

- ✓ The similar study can be extended to State and National level to make results more valid and reliable.
- ✓ The similar study can be undertaken with other variables also.
- ✓ The present study is based on the 100 Humanities and Science Teachers. The study can be conducted on the teachers of other states also with larger sample size.
- ✓ Some other tools may also be employed to find out the comparison of attitude of Humanities and Science teachers towards Information and Technology.

Conclusion:

The present study concludes that teachers of Science and Humanities exhibit non-significant difference in their attitude towards the use of ICT in their teaching practices as an important pedagogical tool. It also indicates that the both male and female teachers exhibit similar curiosity and expertise in the use of ICT among the both group of teachers however the non-significant variation exists. Results have also indicated that there exists some significant differences in terms of teachers age and teaching experience at certain level of stages and the differences can be ameliorate by taking the suitable remedial measures. The result presented in the study substantiates the need of implication of stringent steps to for the improvement of teacher's attitude for Information and Technology in the Humanities as well as Sciences as the difference shown is non-significant. Also it is suggested to attract the more experienced and more aged teachers towards the development of their positive attitude for the use of Information and Technology in their classroom teaching and other educational practices. Thus the present study provides a very significant insight about the teacher's attitudes in both the categories and suggests adopting substantial step to improve the quality of education with the help of Information and Technology.

References:

1. Dexter, S.L., Anderson, R.E. (2002) - USA: A model of implementation effectiveness. Retrieved September 20, 2011, from http://edtechcases.info/papers/multicase_implementation.htm.difference? Paper presented at the NECC conference, June 25-27, Chicago, IL.
2. Ertmer, P.A. (1999) - Addressing first-and second-order barriers to change: strategies for technology integration, Educational Technology Research and Development, 47 (4), 47 – 61.
3. Gaible, E. (2009) - Survey of ICT and Education in the Caribbean, Washington DC: The World Bank.
4. Koohang, A. (1987) - A study of the attitudes of pre-service teachers toward the use of computers, Educational Communication and Technology Journal, 35(3), 145-149.
5. Rovai, I.P., Childress, M.D. (2014) - Explaining and Predicting Resistance to Computer Anxiety Reduction among Teacher Education Students, Journal of Research on Technology in Education, 35:2, 226-235, DOI: 10.1080/15391523.2002.10782382.
6. Margolis, J., Fisher, A. (2002) - Unlocking the clubhouse: women in computing, Cambridge, MA: The MIT Press.
7. Mitra, A., Lensmeier, S., Steffensmeier, T., Avon, R., Qu, N., Hazen, M. (2000) - Gender and computer use in an academic institution: report from a longitudinal study, Journal of Educational Computing Research, 23(1), 67-84.

8. Moursund, D., Bielefeldt, T. (1999) - Will new teachers be prepared to teach in a digital age? Santa Monica. Milken Family Foundation.
9. Nasrin, Fatima, I. (2012) - Attitude of teachers towards Information technology, Mansavi Publications.
10. Pelgrum, W.J. (2001) - Obstacles to the integration of ICT in education: results from a worldwide educational assessment, Computers and Education, 37, 163–178.
11. Reddi, U.V., Sinha, V. (2003) - India ICT use in education: National policies, strategies and programmes. In Baylor, A and Ritchie, D (2002) What factors facilitate teacher skill, teacher morale, and perceived student learning in technology-using classroom? Computer and Education, 39 (1), 395-414.
12. Sadik, A. (2006) - Factors influencing teachers' attitudes toward personal use and school use of computers: New evidence from a developing nation, Evaluation Review 30.1: 86-113.
13. Teo, T. (2006) - Attitudes toward computers: A study of post-secondary students in Singapore, Interactive Learning Environments, 14(1), 17-24.
14. Tsitouridou, M., Vryzas, K. (2003) - Early childhood teachers' attitudes towards computer and information technology: The case of Greece. Information Technology in Childhood Education Annual, 1, 187-207.
15. Wenzlaff, T. (1998) - Dispositions and portfolio development: Is there a connection?, Education 118 (4): 564-573.
16. Yildirim, S. (2000) - Effects of an educational computing course on pre-service and inservice teachers: A discussion and analysis of attitudes and use, Journal of Research on Computing in Education, 32(4), 479-495.
17. Yuen, H.K., Law, N., Chan, H. (1999) - Improving IT training for serving teachers through evaluation. In G. Cumming, T. Okamoto & L. Gomez (Eds), Advanced research in computers and communications in education, Amsterdam: IOS Press, Vol. 2, pp.441-448.
18. Zhang, Y., Espinoza, S. (1998) - Relationships among computer self-efficacy, attitudes toward computers, and desirability of learning computing skills, Journal of Research on Computing in Education 30(4), 420-438.
19. Zhao, Y., Pugh, K., Sheldon, S., Byers, J.L. (2002) - Conditions for classroom technology innovation. Teachers College Record, 104(3), 482–515.

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