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REVITALIZING TEACHER EDUCATION WITH TECHNOLOGY: FROM A PARADIGM TO ATTITUDINAL SHIFT

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ABSTRACT

We live in a technology-driven age. Information is made available at the click of a button. The quality of a nation has come to be indicated by the extent of its technological advancement. However, education as a discipline remains laid-back and ill-equipped to meet the challenges of the new Digi-age. Educators need to be empowered to forge ahead if they have to be agents of change in integrating technology into teaching. The change needs to be initiated at the grass root level and infiltrate right through to have far reaching effects. Teacher trainees are the fulcrum in any system of teacher education. It is only when they are sufficiently motivated and geared to be techno-savvy that education will find its true meaning and purpose.

The present research endeavor attempted to assess the interrelationship of five factors namely, Affect, Perceived Control, Perceived Usefulness, Behavioural Intention and Computer Attitude of teacher trainees. The sample comprised of 100 student teachers pursuing the Bachelor of Education degree. A Computer Attitude Scale was used to study their existing attitudes towards technology. Results indicated a significant correlation among the selected variables indicating that an attitudinal shift in the mindset of the trainees could be well its worth in helping them tide over their misconceptions and apprehensions regarding technology based instruction. In the light of the findings this paper also examines the current paradigm of teacher education and

proposes constructive strategies to enhance the competence of teachers to meet the burgeoning demands of technology driven education.

Key words: Affect, Perceived Control, Perceived Usefulness, Behavioural Intention and Computer Attitude

Introduction:

The transition in education can best be summarized in the words "From the sage on the stage to the new Digi-age". Computer technology has come to be the order of the day but the much needed change in the mindset, particularly of the teaching fraternity continues to trail far behind. Envisioning technological progress needs to be backed up by a realistic action plan to achieve those lofty ideals. The nation needs to invest more effort in preparing its teachers to meet the challenges of technology driven education. This endeavour has to begin at the foundation by revamping the traditional teacher education framework and gradually work its way up to reap the dividends as teacher trainees emerge more technologically empowered and surface techno-savvy.

Chai and Khine (2006) (as cited in Teo et al, 2008) argue that teachers' technology use is influenced by factors which can be classified in two broad categories, external environmental factors and the personal teacher characteristics. The success of student learning with computer technology will depend largely on the attitudes of teachers, and their willingness to embrace the technology (Albion, 2001). Sadik (2006) in his study in Egypt reported that the more positive teachers' attitudes were toward technology, the more likely they were to integrate it in the classroom. Chin and Hortin (1994) stated that the teacher clearly must act as the "change agent" in the relationship between technology and the student. Watson (1998) asserts that developing teachers' positive attitudes towards computers is very important to ensure not only computer integration in the teaching-learning process, but also to avoid teacher resistance to use the computer in their classrooms. Attitude, in turn, constitutes various dimensions, namely, perceived usefulness, computer confidence (Rovai and Childress, 2002), training (Tsitouridou and Vryzas, 2003), gender (Sadik, 2006), knowledge about computers (Yuen, Law and Chan, 1999), anxiety, confidence, and liking (Yildirim, 2000). A major reason for studying teachers' attitude towards computer use is that it is a major predictor for future computer use in the classroom, (Myers and Halpin 2002). This paper is broadly divided into two sections. The first

comprises of a research endeavour to assess the interrelationship of five factors namely, Affect, Perceived Control, Perceived Usefulness, Behavioural Intention and Computer Attitude of teacher trainees. In the present research Affect denotes teacher trainees' feelings towards using computers. Perceived Usefulness (PU) refers to the degree to which a teacher trainee believes that using computers in teaching would enhance his or her job performance**.** Perceived Control indicates the teacher trainees' perceived comfort level or difficulty in using computers. Behavioural Intention denotes the apprehension of teacher trainees' when considering the implications of utilizing computer technology.

In the light of the findings, various activities that are conducted as a part of the existing teacher training course have been examined and reviewed to evaluate their contribution to trainees' existing computer attitudes. Other constructive strategies have then been put forth in a bid to empower prospective teachers to use computer-based applications in the teaching process. Such an endeavor could well provide teacher education with the much needed impetus through a technology-oriented paradigm and attitudinal shift.

Subjects and Methods:

Subjects: The present investigation is a descriptive research of the co-relational type. The sample comprised of 100 teacher trainees enrolled for the B.Ed degree course at a non-government aided English medium college of education affiliated to the University of Mumbai (India) selected by the purposive sampling technique.

Methods: The Computer Attitude Scale (CAS) developed by Selwyn (1997) was used to measure the teacher trainees' attitudes towards computer use. It is a five point rating scale comprising of 21 items related to computer attitudes. The CAS possessed high reliability (alpha = 0.90). After collection of data, the responses were quantified by assigning scale values to the items.

Statistical Methods: The scores were tabulated and then analysed using descriptive and inferential analysis. Descriptive analysis dealt with the description of the magnitude of the variables included in the study to show the extent of Affect, Perceived Control (PC), Perceived Usefulness (PU), Behavioural Intention (BI) and Computer Attitudes (CA) of the Total Number of Trainees (TNT). Inferential statistics was carried out using the VassarStats online calculator and represented in the form of the Matrix of Inter-correlations.

Results:

Table 1 shows magnitude of the variables of the total number of trainees. The findings indicate that the magnitude of Perceived Control was moderate, while that of Affect, Perceived Usefulness, Behavioural Intention and Computer Attitudes was substantial.

Table 1: Magnitude of the variables of the study

VARIABLE	MEAN	% MEAN	MAGNITUDE
AFFECT	22.67	69.46	SUBSTANTIAL
PERCEIVED CONTROL	20.21	59.20	MODERATE
PERCEIVED USEFULNESS	20.47	77.35	SUBSTANTIAL
BEHAVIOURAL INTENTION	15.9	74.38	SUBSTANTIAL
COMPUTER ATTITUDES	79.25	69.35	SUBSTANTIAL

Table 2: Inter-Correlation matrix between the variables of the study

	B	C	D	E
A	0.389	0.554	0.574	0.842
B		0.353	0.376	0.648
C			0.502	0.8
D				0.785

'A' denotes Affect

'B' denotes Perceived Usefulness

'C' denotes Perceived Control

'D' denotes Behavioural Intention

'E' denotes Computer Attitude

The correlation co-efficients indicate that the relationship of, PU, PC and BI with Computer Attitudes is positive and substantial while that of Affect with Computer Attitudes is positive and high in magnitude.

Table 3 denotes the 'r','t' and 'P' values for each pair of variables considered. When P value was less than 0.0001, the difference was considered highly significant and if it was greater than 0.05, it was considered insignificant.

Table 3: Significance of 'r' for the variables of the study

Variables	r	t	df	P (Level of Significance)
AB	0.389	4.179	98	<.0001**
AC	0.554	6.588	98	0.0
AD	0.574	6.937	98	0.0
AE	0.842	15.452	98	0.0
BC	0.353	3.736	98	<.0001**
BD	0.376	4.016	98	<.0001**
BE	0.648	8.423	98	0.0
CD	0.502	5.746	98	<.0001**
CE	0.8	13.199	98	0.0
DE	0.785	12.541	98	0.0

P values are non-directional (two-tailed).

Statistically significant P values have been indicated using asterisks.

'A' denotes Affect

'B' denotes Perceived Usefulness

'C' denotes Perceived Control

'D' denotes Behavioural Intention

'E' denotes Computer Attitude

The findings reveal that the P values for the relationship of Affect with Perceived Usefulness, Perceived Usefulness with Perceived Control, Perceived Usefulness with Behavioural Intention and Perceived Control with Behavioural Intention are highly significant as <.0001. This means that the null hypotheses pertaining to the mentioned variables are rejected implying that there is a significant relationship between them.

Discussion:

The results of the study indicate that Affect, PU, PC and BI are all positively correlated with Computer Attitudes. Thus, enhancing any one of them in teacher trainees would lead to a corresponding improvement in their Computer Attitudes. Further, the results in Table 3 indicate that an increase in Affect is likely to cause a corresponding increase in Perceived Usefulness, an increase in Perceived Usefulness is likely to result in an increase in Perceived Control, Perceived Usefulness is also likely to result in an increase in Behavioural Intention and an increase in Perceived Control is likely to enhance Behavioural Intention. It can be concluded that Perceived Usefulness of computers is the focal point in influencing the computer attitudes of teacher trainees. A slight tip in the balance of this variable could thus impact their computer attitudes adversely.

The reason for Affect contributing to the Computer Attitudes can be attributed to the fact that the prospective teachers were positive in their outlook towards the use of computers in teaching. Research studies have shown that of the factors that have been listed to affect the successful use of computers in the classroom are teachers' attitudes towards computers and these attitudes, whether positive or negative, affect how teachers respond to technologies. This in turn affects the way students view the importance of computers in schools (Teo, 2006) and affects current and future computer usage. Griffin (1988) found that teacher attitude towards computers is an important factor related to the teacher's role towards the effective use of computers in education. The causes of resistance to use computers in teaching according to Nickerson (1981) include feelings of stupidity, fear of the unfamiliar, and the thought that computers have a dehumanizing effect. The need to therefore relieve the minds of teachers from such fears and replace these misconceptions with confidence building measures is of paramount importance to foster computer integration and the enhancement of quality learning and teaching using computers (Yuen et al., 1999). The transformation of the trainees' disposition towards the use of technology in the present study had occurred slowly but steadily as the course progressed due to their exposure to a variety of computer-based applications. They had been encouraged to use computers to prepare power-point presentations for their value-based assemblies, use web-surfing to download information for their projects and incorporate you-tube videos in their seminar presentations. In addition to this, they also prepared lesson modules using Computer Assisted Instruction and opted for the Information Technology Project as one of the choices offered as part of the Extension Education Programme. They were also trained in using the basic

applications of Microsoft-Excel so as to interpret the results of their Action Research and Unit Test projects. All this contributed to them being in command when it came to the use of computers in their teaching, resulting in a consequent attitudinal shift. With regards to Perceived Control, it is possible that while users may believe that computers are useful, they may be, at the same time, too hard to use and that the performance benefits of usage are often outweighed by the effort of using the application (Davis, 1989). However, in the present research, the contribution of Perceived Control to the Computer Attitudes is justifiable on the basis that the trainees who were diffident in using computers were offered peer tutoring by their tech-savvy counterparts as well as the required assistance and direction by the teacher educators as and when they encountered any difficulty in incorporating the use of technology in their curricular activities. This equipped them with the necessary knowledge and proficiency so as to be both self-assured and familiar with the use of the computer. The contribution of Behavioural Intention to Computer Attitudes can best be understood from the fact that the trainees were convinced of the positive outcomes of technology-based instruction owing to their own personalised, rich and rewarding experiences of replacing the traditional chalk and talk approach with ICT in a bid to make learning an interesting and fun-filled activity. The sense of fulfilment that the use of ICT provided the prospective teachers explains the reason for them ranking high in their Behavioural Intention to use computers in their future assignments as teachers. The perceived usefulness of computers is also known to influence attitudes toward computers, and the amount of confidence a teacher possesses in using computers may influence his or her implementation in the classroom (Gressard and Loyd, 1985). People tend to use or not to use an application to the extent that they believe it will enhance their job performance (Davis et al. 1989). In terms of Perceived Usefulness, an individual's perception of the utility of any commodity/technique would be proportionate to the time period for which he/she has been exposed to its' use in order to be convinced of its' relevance and efficacy. In the present study, the trainees had a rather brief exposure of 9 months to the use of computers, which was insufficient for them to explore computer based applications in the teaching-learning process in depth. Recent calls for educational reforms in teacher education stress the need for innovative teacher education restructuring to ensure that pre-service teachers not only understand how to use a computer but also how to design high quality technology-enhanced lessons (Brush et al., 2003; Dawson, Pringle, and Adams, 2003; Ertmer, 2003). In all probability, the contribution of this variable to the variance in their Computer Attitude would be greater once they used computers more

extensively on their entry into the teaching profession and became more aware of the diverse functions of ICT in enhancing the quality of the teaching-learning process. A step in this direction has already been taken with the introduction of the two year Bachelor of Education Degree course designed in keeping with the guidelines prescribed by the National Council for Teacher Education.

In conclusion, the following reforms have already paved their way into the existing teacher training programme in an attempt to enhance its' quality in terms of empowering emerging teachers to bridge the digital divide.

1. Computer Education which was an optional subject earlier has now been introduced as EPC (Enhancing Professional Capacities) under the title of 'Information and Communication Technology' so as to ensure that every teacher emerging from the portals of a teacher education institute is familiar with the basics of computer-based applications in the teaching process.
2. Every trainee will now conduct at least one practice teaching lesson in a classroom on a topic from the syllabus using Computer Assisted Instruction to enable him/her experience the benefits of technology in enhancing the quality of teaching and learning by supplementing the traditional chalk and talk approach.
3. Pre-service teachers are being encouraged to incorporate the use of power-point presentations, you-tube videos and other technology-based instructional materials into their curricular transactions such as seminars, projects and class discussions.
4. The pre-service teacher training course has started to familiarize prospective teachers with the use of the 'Educomp Smartclass' which has already found its way into many schools today, so that they are not caught unawares when they have to use this digital initiative that is fast becoming imperative for schools in a bid to make teaching and learning more engaging, interesting and experiential.
5. Lecture halls in teacher education institutes are now equipped with interactive whiteboards in addition to the traditional blackboards. These allow teachers to record their instruction as digital video files and post the material for review by students at a later time. This can be a very effective instructional strategy for students who benefit from repetition, who need to see the material presented again, for students who are absent from school, for struggling learners, and for review for examinations. Brief instructional blocks can be recorded for review by

students. This will enable them to see the exact presentation that occurred in the classroom with the teacher's audio input. This can help transform learning and instruction. Once trainees are exposed to the functioning of these boards they will be more comfortable to use them in their career as teachers.

6. Teacher trainees are being taught how to use faculty blogs as interactive forums for collaborative learning. This would be a viable alternative to serve the educational purposes of classroom management, discussion, networking and exhibiting student portfolios. Once they discover the rich dividends of this online innovation, they would motivate and train their students in turn to use it to enhance their intellectual development.
7. Creation of Yahoo groups and wikis which are online discussion aids are being encouraged to be used either as announcement bulletin boards, to which only the group members can post, or alternatively as discussion forums.

A metamorphosis of prospective teachers will occur when they learn how to access and effectively utilize technology in teaching. When teachers overcome the limitations imposed by obsolete methodologies, the possibility of constructive learning will increase considerably. Redesigning the current teacher training curriculum in an attempt to meet the challenges of 21st century education head-on is the need of the hour if education has to find its' true meaning and purpose.

References:

1. Albion, P. (2001), "Some factors in the development of self-efficacy belief for computer use among teacher education students", Journal of Technology and Teacher Education, 9, 3, pp. 321- 341.
2. Brush, T., Glazewski, K., Rutowski, K., Berg, K., Stromfors, C., Van-Nest, M. H., Stock, L., and Sutton, J. (2003), "Integrating Technology in a Field-based Teacher Training Program: The PT3@ASU Project", Educational Technology Research and Development, 51, 1, pp.57–72.
3. Chin, S. and Hortin, J.A. (1994), "Teachers' perceptions of instructional technology and staff development", Journal of Educational Technology Systems, 22, 2, pp. 83-98.

4. Davis F.D., Bagozzi R.P. and Warshaw P.R. (1989), "User Acceptance of Computer Technology: A Comparison of Two Theoretical Models", Management Science, 35, pp. 928–1003.
5. Dawson, K., Pringle, R., and Adams, T. L. (2003), "Providing Links between Technology Integration, Methods Courses, and School-Based Field Experiences: A Curriculum-Based and Technology-Enhanced Microteaching", Journal of Computing in Teacher Education, 20, 1, pp.41–47.
6. Ertmer, P. (2003), "Transforming Teacher Education: Visions and Strategies", *Educational Technology Research and Development*, 51, 1, pp. 124–128.
7. Gressard, C. P. and Loyd, B. H. (1985), "Age and Staff Development Experience with Computers as Factors Affecting Teachers Attitudes toward Computers", School Science Mathematics, 85, 3, pp. 203-209.
8. Griffin, J. (1988), "CAL Innovation as Viewed by Purchasers of Computer Software in Secondary Schools", Journal of Computer Assisted Learning, 4, 3, pp. 150-161.
9. Myers, J. M. and Halpin, R. (2002), "Teachers' Attitudes and Use of Multimedia Technology in the Classroom: Constructivist-Based Professional Development Training for School Districts", Journal of Computing in Teacher Education, 18, 4, pp. 133-140.
10. Nickerson, R. S. (1981), "Why Interactive Computer Systems Are Sometimes Not Used by People Who Might Benefit From Them", International Journal of Man-Machine Studies, 15, 4, pp. 469-483.
11. Rovai, A.P. and Childress, M. D. (2002), "Explaining and Predicting Resistance to Computer Anxiety Reduction among Teacher Education Students", Journal of Research on Technology in Education, 35, 2, pp. 226-235.
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, pp. 86-113.
13. Selwyn, N. (1997), "Students' attitudes toward computers: Validation of a computer attitude scale for 16-19 education", Computers and Education, 28, pp. 35-41.
14. Teo T. (2006), "Attitudes toward Computers: A Study of Post Secondary Students in Singapore", Interactive Learning Environments, 14, pp. 17–24.

15. Teo, T. et al. (2008), "Pre-Service Teachers' Attitudes towards Computer Use: A Singapore Survey, Australasian Journal of Educational Technology", 24, 4, pp. 413-424.
16. Tsitouridou, M. and Vryzas, K. (2003), "Early Childhood Teachers' Attitudes towards Computer and Information Technology: The Case of Greece", Information Technology in Childhood Education Annual, 1, pp. 187-207.
17. Watson, D. (1998), "Blame the technocentric artifact! What research tells us about problems inhibiting teacher use of IT", In Marshall, G. and Ruohonen, M. (Eds), "Capacity building froIT in education developing countries", London: Chapman and Hall.
18. 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, pp.479-495.
19. Yuen, H.K., Law, N. and Chan, H. (1999), "Improving IT training for serving teachers through evaluation, In G. Cumming et al., (Eds) "Advanced Research in Computers and Communications in Education", Amsterdam: IOS Press, 2, pp. 441- 448.