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A Study on Indian Teachers' Roles and Willingness to Accept Educational Technology

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Abstract: *It is a truth universally acknowledged that Educational Technology empowers teachers and learners to face and promote the change that world education is facing since the beginning of 21st century in course of its transformation from a traditional ways of instruction and learning towards more innovative ways. Here teachers' roles and their attitude to adapt of Educational Technology play an important role. Majority of teachers in many 3rd world countries like India still prefer to adopt the old authoritative role of a knowledge transmitter than new roles like facilitator or delegator. But education in the present century lays a great demand for transformation of teacher roles from the traditional knowledge transmitter to the new roles. This research study focuses on the teachers' perception to their new roles and their willingness to accept educational technology in Indian schools. For this purpose a case study was launched among 175 primary and secondary teachers from various schools in West Bengal a state in India. Samples were studied on the basis of five salient teachers' roles namely- expert, authority, personal model, facilitator and delegator- as theorized by Anthony Garsha(1990). The results exhibits that the teachers who were in favour of facilitator and delegator roles were more inclined to adopt educational technology. Simultaneously, this study also focuses on the cultural barriers prevalent in Indian teaching atmosphere regarding the adaptation of ET and a comparison with other developed western countries that have already made an enormous improvement on this field. This study is significant as improving the quality of education is a priority for most developing countries like India in which governments are facing numerous challenges to identify efficient ways to use their scarce resources and elderly culture to raise the quality of education in a tech-savvy environment.*

Keywords: *Educational technology (ET); ICT; Teacher roles; Indian context; e-learning*

1. INTRODUCTION

Information and Communication Technologies have recently gained groundswell of interest. ET is a significant research area for many scholars. Their nature has highly changed the face of education over the last few decades. The development of science and technology, especially the application of information and communication technologies (ICT) in the new era has greatly influenced teaching and learning in education. Educational transformation and reform have become an urgent issue across the globe to meet the demands of new educational objectives in the knowledge-based economy (Barone & Hagner, 2001). This transformation requires that teachers can face their new tasks in a more flexible way and be prepared for their new roles. Educational technology is the practice of using ICT to facilitate learning and improve performance by applying appropriate technological processes and resources (Richey, 2008). Educational technologies bring fundamental changes to the way teaching and learning occur in schools. Effective use of ICT in schools must enable critical role shifts for teachers (Schifter, 2000). This major factor determines the prospect of the impact of educational technology on school change. In order to innovate education, besides greater access, connectivity, new curriculum packages and online tools, it is also very important to support and cultivate new roles for teachers in the context of a whole-school change process (Clark, 2001). Since the use of ICT in education, there has been an ongoing debate as to the different roles of teachers (Haaksma-Oostijen & Puper, 2003; Riel, 2000; Semenov, 2000). In fact, new educational technologies do not curb the previous roles of teachers, but they call for a redefinition or additional roles of teachers. The role of teachers has changed and continues to change from being an instructor to becoming a constructor, facilitator, coach, and creator of learning environments. Today teachers are required to be facilitators helping learners to make judgements about the quality and validity of new sources and knowledge, be open-minded and critical independent professionals, be active co-operators, collaborators, and mediators between learners and what they need to know, and providers to scaffold understanding (Weinberger, Fischer, & Mandl, 2002). The scenario of the classrooms is fast changing worldwide. This change requires new competencies of teachers. There is a technological gap between

the progress of the society and instructional activities of the teacher in the classroom. If we see in our society on the one hand technology has revolutionized our society and on the other hand the teaching learning activities at school level have remained so far away from technology.

Still in most of Indian classrooms the knowledge is imparted by the teacher in an ancient way, a teacher centric mode which is most of the time boring and not to gain interest to the student. But present 21st Century's education is student centric education. Students learn from multi sources and for this reason use of ICT and educational technology is very much essential in educational field and simultaneously teacher's knowledge, roles and attitude towards educational technology required to be transformed. For teachers to be able to integrate the use of ICT into teaching, a vast array of competencies need to be developed, such as: creativity, flexibility, logistic skills for assigning work and study places as well as grouping students, skills for project work, administrative and organizational skills, collaborating skills, and computer competence. In assuming their new roles, teachers are expected to upgrade their knowledge and acquire new skills, including new pedagogical skills and ICT competence to fully integrate educational technology into the curriculum (Zepp, 2005). So this present study has immense significance as it shows the changing roles and attitudes of teachers in Indian classrooms to face the impact of technological innovations.

2. EDUCATIONAL TECHNOLOGY AND ROLES OF THE TEACHERS

The organizational use of technology changes roles and relationships, uses of time and resources, and the availability of support for teachers and students. Teacher roles are influenced by a particular pattern of needs, as well as mental, spiritual and physical behaviours that teachers display in the classroom (Eble, 1976). Teachers are regarded as the most influential factor in educational innovations (Fishman & Davis, 2006). The new technologies are accelerating fundamental changes in the teacher's role as well as in the shape and in the activities in the classroom. Teaching style is the unique pattern of classroom practices displayed by an instructor in the classroom. Teaching style emerges from the instructor's beliefs, needs, education, personality and approach to learning. A shift in the role of a teacher utilizing ICTs to that of a facilitator does not obviate the need for teachers to serve as leaders in the classroom; traditional teacher leadership skills and practices are still important especially in formulation of lesson planning, preparation, and follow-up.

Anthony Grasha along with Sheryl Riechmann, created the Grasha-Riechmann(1990) learning styles model, which isolated distinct learning styles. The research of Grasha (1994) summarizes several patterns that describe the role differences of teachers: expert, formal authority, personal model, facilitator and delegator. Grasha (1994) gives the following examples to describe these different roles:

- **Expert:** Teachers adopting the role of expert perceive that it is essential that the teacher should have abundant knowledge about the domain they teach and should play a role of knowledge source for the students. The expert teaching style is filled with status and knowledge. The goal of the expert teacher is to impart his or her expertise onto the students. This style can be intimidating for students.
- **Formal authority:** Teachers adopting the role of authority perceive that the teacher should be very knowledgeable about the subject they teach and most importantly they assume themselves to be authoritarian in this knowledge domain and students should follow the standards the teachers set for them. The formal authority style wields power and status in the classroom. However, this is different than the status held by the expert. For example, the formal authority teacher might be the head of the department. A teacher using this style may seem somewhat disconnected from the needs of students and may appear set in his or her ways in the classroom.
- **Personal model:** The role of model means that what the teacher says, does or demonstrates in class serves as a model for students to follow and learn from, and teachers adopting this role perceive their behaviour to be influential to student development. This teaching style is characterized by a very hands-on approach. Instructors using this style lead by example and expect students to follow their lead. In other words, this teaching style is frequently interpreted as a ''my way or the highway'' approach.
- **Facilitator:** Teachers adopting the role of facilitator regard it as more important for teachers to guide students to learn new things based on what they already know and facilitate the learning processes for students. Teachers

with the facilitator style encourage learning by interacting with students and providing options for learning. Think of these types of teachers as consultants. They provide the information that allows students to make up their own minds.

- **Delegator:** Teachers adopting the delegator role will more often give assignments to students and encourage them to work independently or in a self-directed manner Students in this course engage in self-initiated, self-directed learning experiences.

The discussion of above theoretical perspective is necessary here as this case study research is based on this theory. It has to be noted that almost every teacher adopts each of the five teaching roles to varying degrees. In different cultural contexts, teacher roles are viewed differently with an emphasis on some of these roles or other additional roles (e.g. Cortazzi, 1990). The adoption of specific teacher roles in the instructional process may facilitate or hinder students' ability to acquire content and skills (Zhu, Valcke, & Schellens, 2010). This study is an attempt to find out the most appropriate teacher roles for the first changing classrooms in India.

3. EDUCATIONAL TECHNOLOGY IN INDIAN CONTEXT

Education Technology (ET) is defined as "the study and ethical practice of facilitating learning and improving performance by creating, using and managing appropriate technological processes and resources" (Richey, 2008). ET has demonstrated a significant positive effect on student achievement and the teaching and learning processes as a whole (Bialo et al., 1995). In the last decade, educational technology has made only modest inroads into changing teaching in schools and universities (Moser, 2007). In India also digital technology has been evolving over the last few years, changing the ways of students' learning concepts in school. The traditional chalk and talk method has paved the way for more interactive teaching methods as schools are increasingly adopting digital solutions to keep themselves abreast with the technological changes. Now-a-days ICT's are transforming schools and classrooms a new look by bringing in new curriculum based on real world problems, projects, providing tools for enhancing learning, providing teachers and students more facilities and opportunities for feedback. The emergence of different educational tools and software has motivated many learning organizations to integrate them into the curriculum as they can have a great impact on student learning (Hawkins et al., 1996).

Still there are so many barriers both in infrastructural and cultural contexts in the implementation of ET in Indian schools. Cultural contexts need to be considered as an important element in the implementation of ICT (Albirini, 2006) and culture may play an important role influencing how teachers relate their beliefs to ICT use (Chai, Hong, & Teo, 2009). Cultural differences have been identified when comparing Indian and American teacher perspectives on the use of ICT in teaching and learning. The findings indicate that Indian teachers express more doubts about the constructivist principles underlying many ICT applications (e.g., collaboration, independent learning and self-directed learning). Previous studies also identified that there is a bigger power distance between teachers and students in the Indian context compared to Western contexts. Indian teachers perceived themselves more of an authority role compared to Western teachers. The authority figure of Indian teachers has an impact on the teachers' use of educational technology. On the one hand, teachers use educational technology mostly to deliver factual knowledge as they most often do in classrooms; on the other hand, the interactive use of educational technologies is rather limited as this may not be in line with the formal authority role of teachers. Teachers regarding authority as an important role would consider a dialogic or student centred approach as heresy and evidence of an incompetent teacher (Brooks, 1997, p. 14). Instead, respect for teachers and teacher authority is considered an important basis for classroom discipline and control of student behaviour (Ho, 2001). Teacher-cantered pedagogy and student compliance are prevalent in the Indian classrooms. And recent research points out that student centred learning clashes with more traditional norms and incentives of many Indian teachers (Fang & Warschauer, 2004).

Indian students are highly examination-oriented. This is closely related to the highly selective educational system. Entrance examinations, especially the in Professional and Technical courses, University Entrance Examinations have a large influence on Indian education. This means that primary school students have to face a competitive examination in order to get enrolled at their desired secondary schools; and the secondary school students have to face a very harsh national university entrance examination in order to access universities. Under the pressure of the selective educational system, schools and universities are forced to use teaching and learning methods that are very

examination-oriented, as the exam scores are important evaluation criteria for the students' further studies or careers. For this aim, many Indian teachers stress systematic knowledge transmission, thus teacher-centred approaches still prevail boldly in Indian schools and universities. During the present decade, huge investments have been made in ICT infrastructure at schools and universities in India. Considering the level of student computer competence, and the time they spend on the internet, technical skills of Indian students in urban areas are not less advanced than Western students' skills (Chen, 2006). However, the integrated use of ICT in teaching is facing challenges (Gerbic, 2005). In some experimental schools, special computerized classes are set up with "one child one PC" and teachers using computer as the main media for education. However, in regular classes, the integrated use of computer in teaching and learning is limited. So a variety of changes must be implemented to optimize teacher use of ETs and ICTs. Shifting pedagogies, redesigning the curriculum and assessment, and providing more autonomy to the schools help to optimize the use of ICT. With sufficient enabling factors in place, teachers can utilize ICTs in as 'constructivist' a manner as their pedagogical philosophies would permit. One of the roles of ICT in education is creating certainty about using the information when are necessary. ICT can be as a powerful tool that upgrades quality and efficiency of education so there is no need to physically present to the classroom. The training based on ICT have some features such as: distance education, flexibility, interaction, active learning, cooperation and motivation (Farajollahi & Sanaye'i, 2009)

Several studies and researchers have indicated many other barriers against teachers adopting educational technology in India exist. Robertson (2004) points out that the adoption of instructional strategies is closely related to teachers' perceptions of their roles and perspectives about teaching and learning. Recent studies have incorporated additional factors, such as the role of educational beliefs (Ertmer, 2005; Tondeur, Valcke, & van Braak, 2008) and how teachers perform their roles (Postholm, 2006). So the whole of the above literature review confirms that the teachers' roles and willingness to adopt ET is an important factor to build up a tech-savvy teaching-learning culture in a country.

4. RESEARCH OBJECTIVES

This present research study focuses on the following two research questions:

1. How do Indian teachers perceive their teacher roles in a Technology led environment?

2. Is there a relationship between teachers' perception of their roles and their adoption of educational technology?

5. METHODS

5.1 Research setting

The development of educational technology has become one of the important elements in the modernization of Indian education. During the last 20 years, the Indian government has initiated a large-scale investment in ICT in the school system. From 2000 on, the Indian government has promulgated policy guidelines to encourage teachers to apply ICT and integrate educational technology into their teaching processes. However, the development of ICT in education faces great challenges. In some schools, the hardware infrastructure is quite advanced, however the level of use is quite limited. Many factors (both internal and external) are related to the adoption of educational technology in the classrooms (Gamoran, Secada, & Marrett, 2000; van Braak, 2001). The present study only focuses on one of the important internal factors – teachers' perceptions of their roles.

5.2 Participants

A case study was conducted in 2017 from Janauary to December, to address the above research questions. Participants in the study consisted of 175 teachers from different Indian schools (both primary and secondary) in the state of West Bengal. The questionnaires were delivered by paper to each of the 175 teachers. The response rate was 72%. Teachers of five different subjects (Bengali language; mathematics; English language; science including chemistry, physics and biology; and social sciences including history and geography) were randomly selected. However, an attempt was made to select a representative sample in terms of gender and age. The composition of teachers is shown in Table 1.

Table 1: *Indian teacher participants in this study*

Age group	Male	Female	Total
20–30	25	25	50
31–40	20	23	43
41–50	27	26	53
Over 50	12	17	29
Total	84	91	175

5.3 Research Tools/Instruments

Teacher roles in classroom environment. The Teacher Role Survey was administered based on the instrument developed by Grasha and Riechmann-Hruska (1990) reflecting five scales that centre on specific teacher roles: expert, formal authority, personal model, facilitator and delegator. When filling out the instruments, teachers were asked to reply to the items by reflecting on their experiences with a particular teaching course. A questionnaire with 40 items required respondents to indicate on a five-point scale to which extent they agree/disagree with this item. The questionnaire was translated from the original English version into Indian. Back-translation techniques were applied to ensure the quality of the translation. Furthermore, the Indian version was first tested with 15 participants to ensure the comprehensibility of the questions by Indian respondents. The internal consistency for the five factors was good or acceptable (Cronbachs α ranges between .74 and .83).

Teacher willingness to adopt educational technology. Teacher willingness to adopt educational technology was measured with five scales (willingness to invest time, willingness to learn, willingness to use ICT for teaching in the classroom, willingness to adopt online instruction and learning, willingness to use ICT for preparation of lessons and assessment of students). This questionnaire was self-developed and was composed of 20 questions. It was tested with a pilot study with 25 participants. Questions are on a five-point scale and the internal consistency of each scale was sufficiently acceptable (α between .75 and .85). Next to the questionnaires, interviews with focus-groups (5 teachers per group) interviews were conducted with a random selection of 65 teachers. Each interview took about 40 to 50 minutes. Teachers were interviewed with semi-structured questions about their perceptions of teacher roles, perceptions on education innovation and adoption of educational technologies. All interviews were recorded and the transcripts were coded for analysis.

6. EXPERIMENT ANALYSIS AND RESULTS

The mean scores of Indian teachers' perceptions of the five teacher roles are presented in Table 2. In general, most of the Indian teachers seemed to be more in favour of the teacher as expert, authority and model compared to the roles as facilitator and delegator. Some differences were detected between teachers of different age groups. MANOVA tests showed that the younger group of teachers (20– 30 year-olds) were less likely to adopt the role of expert and authority than other age groups ($p < .05$). The elder group (over 50 year-olds) of teachers was less likely to adopt the role of facilitator and delegator compared to the younger groups of teachers ($p < .05$). T-test results show that there were no significant differences between female and male teachers in their perceptions of teacher roles ($p > .05$).

Table 2: *Perception of teacher roles in an Indian school setting*

Teacher roles	Male M (SD)	Female M (SD)	20–30 M (SD)	31–40 M (SD)	41–50 M (SD)	Over 50 M (SD)	Total M (SD)
Expert	5.12 (.66)	5.05 (.48)	4.51 (.62)	5.05 (.52)	5.10 (.67)	5.22 (.40)	5.06 (.43)
Authority	5.13 (.58)	4.74 (.53)	4.48 (.52)	4.90 (.64)	5.03 (.46)	5.19 (.68)	4.93 (.48)
Model	5.01 (.59)	4.92 (.64)	4.88 (.63)	5.02 (.53)	5.05 (.59)	5.10 (.55)	4.99 (.56)
Facilitator	4.75 (.51)	5.01 (.71)	5.12 (.52)	5.00 (.48)	4.76 (.47)	4.30 (.65)	4.82 (.52)
Delegator	4.65 (.62)	5.94 (.58)	5.07 (.71)	5.01 (.61)	4.70 (.58)	4.23 (.51)	4.79 (.55)

Cluster analyses were conducted to understand teacher profiles based on their dominant perceptions of teacher roles. The results show that 37% of the teachers preferred the expert/authority profile; 25% of them belonged to the expert/authority/model profile; about 16% of the teachers supported the facilitator/delegator profile and 22% of the teachers supported both the facilitator and expert roles.

Table 3: *Teacher profiles and their adoption of educational technology*

Teacher profiles and characteristics	Willingness to invest time	Willingness to learn	Willingness to use ICT for teaching in the classroom	Willingness to adopt online instruction and learning	Willingness to use ICT for preparation of lessons and assessment of students
Expert/Authority (37%)		*			
Expert/Authority/Model (25%)		*			
Facilitator/Expert (22%)		#	*	*	*
Facilitator/Delegator (16%)		#	#	*	*

** p < .05. # p < .01.*

No significant relationship was identified between the expert/authority and expert/ authority/model profile teachers and their willingness to adopt educational technology, except in the scale of "willingness to learn". The expert/authority style is normally more in line with the 'traditional' teaching style and it sends a message to students that "I'm in charge here" and tends to create a "cool" emotional climate and some "distance" between teacher and student. In contrast, a positive relationship was found between the facilitator/expert and facilitator/delegator profile teachers and their willingness to adopt educational technology. These teachers are more likely to send a message to students saying, "I'm here to support you and to act as a resource person." A warmer emotional climate is created and students and teachers can work together, share information, and the boundaries between teacher and student are not as formal as the first two clusters as presented in Table 3. The interview results were coded and analysed. Next to the triangulation of results found in the quantitative data, additional results were derived. The interview results confirmed that the authority and expert roles are important roles for Indian teachers. According to many of them, "a teacher needs to be an authority in the knowledge domain", and "a teacher needs to be knowledgeable in his/ her teaching subject". As to the facilitator and delegator roles, a large number of Indian teachers support the notion that a teacher should facilitate the learning processes of students. Next to the facilitator role, many Indian teachers also refer to their role as a "guide", who gives guidance and offers help to students during their learning processes. Many teachers said that they often adopt different roles based on the teaching subjects and the knowledge level of students. The model role is also regarded to be important, as most Indian teachers believe that they should play an important role in students' personal development. As to the willingness to adopt educational technology, most teachers expressed their willingness to learn. However, there seemed to be no significant relations between teachers who were in favour of the expert and authority roles and their willingness to adopt ICT in the classroom and online instruction and learning. On the contrary, the teachers who were in favour of facilitator and delegator roles were more inclined to adopt educational technology.

7. DISCUSSION ON THE STUDY

Teacher roles and adoption of educational technology. The results of this study demonstrate that the majority of Indian teachers regard "expert", "authority" and "model" as important roles where the authority figure of teachers is still important in the Indian context. Our results indicate that there are no significant differences between female and male teachers in their perceptions of teacher roles. In fact, many teachers point out that they adopt different roles, depending on the teaching objectives, student background, etc. Nevertheless, each role demands that teachers have or are willing to acquire the skills to adopt related instructional strategies. In the interviews, quite some teachers consider the transmission of knowledge to be (still) very important, and thus it is the teacher's job to 'provide' and 'transmit' theories and basic knowledge to them. The younger teachers seemed to be more inclined to adopt the facilitator and delegator roles compared to the elder teachers. The results show that teachers with a profile of facilitator/expert and facilitator/delegator are more willing to adopt educational technology. This is in line with previous claims that in the new learning environment, a new set of teacher roles is needed, such as facilitator and delegator (Bauersfeld, 1995; Brownstein, 2001). Social constructivism thus emphasizes the importance of the learner being actively involved in the learning process, unlike previous

educational viewpoints where the responsibility rested with the instructor to teach and where the learner played a passive and receptive role. Recent research has indicated that teachers' educational beliefs are closely linked to their actual use of ICT in classrooms and adoption of educational technology (Dwyer, Ringstaff, & Sandholtz, 1991; Tondeur et al., 2008).

ET can have the greatest impact on improving student learning and achieving measurable educational objectives (Hawkins et al., 1996). In addition, it can empower teachers and learners, transforming teaching and learning processes from being highly teacher dominated to student centred (Higgins, 2003). This transformation will increase the teaching gain for students and improve the quality of learning. Moreover, ET may provide students with valuable skills that are recommended by the market. Thus, ET creates opportunities for learners to develop their cognitive, critical thinking, information reasoning and communication skills (Chigona and Chigona, 2010). It can also help learners to explore education beyond classrooms by providing access to a wide range of resources and information, promoting scientific inquiry and discovery and allowing students to communicate with experts (Means et al., 1994). This study has proven from a new perspective that teachers' perceptions are an important aspect that influences their adoption of ET in teaching and learning. Therefore, the findings from the Indian context, at least from this study, are in line with other studies conducted in Western contexts. Teachers are expected to know a great deal about individual learning processes and to have the skills to coach these processes, as well as subject knowledge (Volman, 2005). Electronic learning environments are rational systems which take a lot of work off teachers' shoulders. However, the role of teachers will become more complex rather than simpler. Teachers must know what programs are available that are suitable for their students' individual needs and keep abreast of this. They need to be the arrangers or planners of students' learning processes: they bring together the educational tools and set them up in a particular way. Huge demands are made on teachers' abilities in fulfilling their different roles as instructors, consultants, trainers, coaches, advisors, navigators, and assessors. Teachers have more freedom and flexibility in their work on the one hand, yet on the other, the necessity of keeping the information in the student monitoring system up to date adds an administrative element to their work. This requires a more structural approach which in turn limits their freedom, preparing not only lessons but projects. This makes planning and coordination skills important. In addition, teachers need to be adept at prompting and holding discussions with students about meaningful questions.

Challenges for teachers. A number of studies have shown that there are a wide range of factors that influence educators in adopting their teaching with technological tools (Cox et al., 1999). Among these factors are the quality of the ICT resources, incentive to change (Cox et al., 1999), instructor's readiness to adopt and use technology, instructor's confidence, knowledge and ability to evaluate the role of ICT in teaching and learning, technical support, students' acceptance and attitude to the use of IT, effective training and personal development, leadership and the availability of IT resources (Balash et al., 2011, Sherry et al., 2000). Peeraer et al. (2010) identified other factors include access to computers, intensity of computer use, ICT skills and ICT confidence. Means et al. (2001) mentioned that factors, such as lack of technology infrastructure, technical support and high quality digital content, can affect technology implementation in urban schools. Balsh et al. (2011) identified institutional support as one of the important factors to be considered in adopting ET. They discussed institutional support from the lack of policy and planning of using the ET and the lack of a reward system or appreciation reward for using such tools. Muller (2008) considered the instructor's attitude towards computing important and argued that this factor is critical to the effectiveness of integrating ICT into the curriculum. If instructors are not comfortable with technology, then low expectations from technology can be perceived. In addition to the attitude of the instructors, Naimova (2008) identified the attitude of administrators as one of the factors that may affect the adoption of ET. He argued that the lack of support from administrators may hinder the implementation of technology in the classroom (Naimova (2008).

Educational technology can provide many advantages for instructional and learning innovations. However, educational transformation also sets up new requirements to teachers as to their teaching and learning concepts and the roles of teachers. In the new scenario, teachers cannot just stick to the traditional transmitting methods of teaching; instead teachers will play new roles as guides or facilitators for students. This way, students' interests can be better stimulated, and students can take more initiatives to learn more actively and develop their independent

thinking and abilities to do things and solve problems themselves. Therefore, teachers need to adapt their beliefs about teaching and learning, and be prepared for the new roles that are deemed helpful in promoting student learning when using educational technologies. Secondly, teachers need to be willing to invest time and willing to learn, for example to improve their digital literacy in order to tackle the technology issues properly to support teaching and learning. Only this way they can take full advantage of educational technology, the interactive and communication technologies to connect and interact with their students and the outside world in a constructive way. Are in-service teachers and potential teachers in today's teacher training programs being well-prepared in how technology relates to educational philosophy? Teachers need the sufficient access, training, ongoing support and time to become proficient, productive users of technology. This is crucial in order for teachers to fulfil their roles as facilitators of learning. Nuyen (1995) describes concisely that the role of education is not to pass on the truth but to edify; what we need is not a battery of computer terminals, but a whole range of teachers who, not only convey truth, but who excite students' imagination.

Other challenges for innovation in education. In the last decade, reform and curriculum transformation have taken place in India to promote more student activity and participatory approaches. However, at many schools, the boundaries between old and new teaching approaches are ambiguous and intertwined, and in some cases no sustainable model is available. Although computer and Internet technologies are used, they closely model instructor-led teaching, focusing mostly on broadcast video-based lectures or synchronous classes on the Web. This is not sustainable and cannot improve student performance and learning outcomes. Secondly, although new concepts of teaching and learning have been promoted and transformed the teaching practices of some teachers, there are quite some teachers still sticking to the traditional "transmitting" mode. Main obstacles for the development of educational technology are teachers' concepts of teaching and learning. Therefore, there is an urgent need to transform teachers' conception of teaching in the Indian context. Thirdly, it is important to nurture a new environment that supports the change of educational structure, form a new type of teaching and learning mode, and meet the demands of education objectives in the new era.

More importantly, the traditional norms about the role of teachers and the selective educational system in India have great impacts on the adoption of educational technology in teaching and learning. In addition, although many schools and higher education institutions have invested a lot in hardware, the educational technology application in teaching and learning is still quite limited. In many schools and universities, the use of ICT in teaching and learning is only applied for "demonstration courses" or "elite courses". Furthermore, although huge progress has been made in ICT infrastructure construction, there still is a lack of funding for developing e-resources, online instructional content and teacher training, etc. As the Indian government put forth, invigorating the country through science and education, and education should come first in order to prepare the younger generation for creative thinking and innovation for the future. "Building a life-long learning society" has also become a new objective in the Education Action Plan by the Ministry of Education. In order to build schools and universities as learning organizations in the new century, some fundamental changes are needed. The issues raised in this study tackled some of the critical areas where fundamental changes are necessary. Educational Technologies can be found to be less effective and even inefficient teaching supportive tools if adopted without appropriate alignment with the nature of the course, course objectives and learning outcomes, lecture type and material, students learning styles and teaching styles (Balash, et al., 2011). Therefore, before taking a decision to adopt certain ET, the educational organizations need to develop strategic planning in which their vision and mission, together with the teaching and learning processes needs, should be identified and embedded in their strategy (Balash et al., 2011).

8. CONCLUSION

The current study was conducted to investigate Indian teacher roles, and their willingness to adopt educational technology in schools. A case study of some Indian school in West Bengal was made for this purpose and empirical data was analysed to understand teachers' insight into their attitudes towards educational technology. The study gives insight into the current status of educational technology adoption in the Indian context and the factors influencing the adoption of educational technology. In order to face the challenges of educational change in the new era, the two critical factors – teacher roles and teacher computer competency – should be attended to. Schools and

universities should aim at building themselves as learning organizations to meet the demands of education in the new knowledge economy. Teaching in the knowledge society requires a new form of teaching concept and teacher roles. This will all require new forms of educational professionalism, tapping well beyond traditional teachers, and blending together with the communities that schools serve. The future that teachers and students co-create can provide the emerging knowledge a boost, greatly enhancing human capital and potentials, and the role of schools as learning communities in general. The integration of ET will enable them to build teaching competencies and therefore, will impact their teaching effectiveness and performance.

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