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A STUDY ON THE ROLE OF INDIAN TEACHERS AND THEIR WILLINGNESS TO ADOPT EDUCATIONAL TECHNOLOGY

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Abstract:
Educational Technology (ET) has become a revolutionary force in global education since the starting of 21st century by leveraging traditional methods of teaching and learning into more innovative approaches. Teachers' characters and their inclination towards ET become prime movers in this direction. In the majority of developing countries like India, a vast majority of teachers continue to desire traditional, authoritative roles of teaching as opposed to newer roles such as facilitators or delegators. But the demands of education in the 21st century necessitate a transition from traditional knowledge transfer to more active roles. This study examines the perceptions of Indian teachers about their changing roles and their readiness to embrace ET in their teaching. A case study was conducted involving 175 teachers from primary and secondary schools of Aligarh, India by examining five major roles of teachers—expert, authority, personal model, facilitator and delegator—as discussed by Anthony Grasha (1990). The findings reveal that teachers oriented towards facilitator and delegator roles are more likely to embrace Educational Technology (ET). In addition, the study identifies cultural constraints in India that hinder the adoption of ET. This study is particularly pertinent to developing countries like India where the quality of education needs to be enhanced while the governments are finding it difficult to realize benefits from limited resources and traditional cultural practices to enhance education in a technological era.

Keywords: Information Communication Technology, Educational Technology, E-learning and Teachers' Roles

Introduction

Information and Communication Technologies (ICT) have gained significant attraction in recent years for transforming education globally. ET, a critical area of research has reshaped teaching and learning over the past few decades. The integration of ICT into education has become essential to meet the demands of a knowledge-based economy (Barone & Hagner, 2001). This transformation demands the teachers to adjust their roles and to be flexible in the teaching approach. ET deals with the application of ICT to enhance learning and performance by adopting proper technological procedures and tools (Richey, 2008). It has transformed the teaching and learning process, demanding the adjustment of teacher roles (Schifter, 2000). In order to innovate education, it is crucial to empower the teachers to acquire new roles in the environment of school-wide change (Clark, 2001). The application of ICT has increased arguments against the modification of the teachers' roles (Haaksma-Oostijen & Puper, 2003; Riel, 2000; Semenov, 2000). Rather than replacing traditional roles the ET has expanded them by requiring teachers to act as facilitator, coaches and creators of learning environments. Modern educators must guide the students in evaluating new knowledge, collaborate actively and scaffold understanding (Weinberger, Fischer, & Mandl, 2002). While these changes on a global scale, there remains a technology divide between societal development and instructional practices in particular in India where teacher-centered approaches continue to prevail.

This study propounds the need for Indian teachers to embrace student-centred learning through the utilization of ICT and ET to enhance learning outcomes.

Adoption of Educational Technology and the Role of Teachers:
The integration of technology in education reshapes the roles of teachers, resource allocation and classroom dynamics. Teachers are pivotal in driving educational innovation (Fishman & Davis, 2006) and ET accelerates changes in their roles and classroom activities. Teaching styles influenced by educators' beliefs and personalities must adapt to incorporate ICT. Since traditional leadership skills remain important the teachers must also adopt facilitator roles to effectively integrate technology into lesson planning and delivery of lectures. These roles vary across cultural contexts and influence the students' ability to acquire knowledge and skills (Zhu, Valcke, & Schellens, 2010). This study examines which roles are most suitable for India's evolving educational landscape.

Educational Technology in India:
ET, defined as the ethical use of technology to enhance learning (Richey, 2008) has positively impacted the students' achievement and teaching processes (Bialo et al., 1995). However, its adoption in Indian schools has been slow despite the growing use of digital tools. Traditional teaching methods are gradually being replaced by interactive and technology-driven approaches. However, infrastructural and cultural barriers hinder ET implementation in India. The cultural factors significantly influence teachers' attitudes toward ICT (Albirini, 2006; Chai, Hong & Teo 2009). The Indian teachers often perceive themselves as authority figures which limits the interactive use of ET. The examination-oriented nature of Indian education further complicates the adoption of student-centred learning methods. This study emphasises the need for Indian educators to overcome these barriers and embrace ET to improve educational outcomes. This research highlights the importance of transforming teacher roles and attitudes in India to align with global educational advancements. By addressing cultural and infrastructural challenges, India can leverage ET to enhance the quality of education and prepare students for a technology-driven future.

The education system in India is solely focused on examinations, as academic performance is a key determinant for students' future educational and career opportunities. To achieve this, many educators in India prioritize structured knowledge delivery, leading to a continued dominance of teacher-centred methods in schools and universities. Over the past decade, significant investments have been made in enhancing ICT infrastructure across the educational institutions in India. In urban areas, students' technical proficiency and internet usage are comparable to those of their Western counterparts (Chen, 2006). However, effectively integrating ICT into teaching remains a challenge (Gerbic, 2005). While some experimental schools have introduced specialized computer-based classes with a "one child, one PC" approach, where computers serve as the primary teaching tool, the incorporation of technology in regular classrooms remains limited. To maximize the potential of educational technologies (ETs) and ICTs, several changes are necessary, including shifts in teaching methodologies, curriculum redesign, updated assessment methods and greater autonomy for schools. When supported by adequate resources it is advisable that the teachers can adopt ICTs in a manner aligned with constructivist teaching philosophies. ICT plays a crucial role in education by ensuring access to information when needed and enhancing the quality and efficiency of learning, even without physical classroom presence. ICT-based training provides benefits such as distance learning, flexibility, interactive engagement, active participation, collaboration, and increased motivation (Farajollahi & Sanaye'i, 2009).

Numerous studies highlight additional barriers to the adoption of educational technology by teachers in India. Robertson (2004) emphasizes that the implementation of instructional strategies is closely

tied to teachers' perceptions of their roles and their views on teaching and learning. Recent research has expanded on this, incorporating factors such as educators' beliefs (Ertmer, 2005; Tondeur, Valcke, & van Braak, 2008) and their approach to teach (Postholm, 2006). Collectively, these studies underscore that teachers' attitudes and willingness to embrace ET are critical for fostering a technology-driven educational culture.

Research Objectives

This study has the following research objectives:

1. To study the perceptions of Indian teachers towards technology-driven educational environment.
2. To investigate the connection between teachers' perceptions of their roles and their adoption of educational technology.

Methodology

The integration of technology with education has become a pivotal aspect of modernizing India's education system. Over the last two decades the Indian government has invested significantly in ICT infrastructure within schools. Since 2000 the policy initiatives have encouraged the educators to incorporate ICT into their teaching practices. Despite these efforts, challenges persist in effectively utilizing ICT in education. Although some schools boast advanced hardware yet its practical application remains limited. Various internal and external factors influence the adoption of educational technology in classrooms (Gamoran, Secada, & Marrett, 2000; van Braak, 2001). This study focuses only on one key internal factor: Teachers' perceptions of their roles.

Respondents

The study based on the conducted case study from July to December 2024 to explore the research questions. In all 175 teachers from several primary and secondary schools in Aligarh, India were investigated for the purpose of study. The investigation was done through the exhaustive questionnaires filled by all respondents, yielding a 72% response rate. Teachers from five subject areas— Urdu, English, Mathematics, Social Sciences and Science were randomly selected. Efforts were made to ensure a representative sample in terms of gender and age. The demographic breakdown of participants is shown in Table 1.

Table 1
Number of Teachers- Respondents

Age- Interval	Respondents		Total
	Male	Female	
> 50	12	17	29
41–50	27	26	53
31–40	20	23	43
20–30	25	25	50
Total	84	91	175

Research Tools

For evaluation, the researcher utilized the Teacher Role Survey based on Grasha and Riechmann-Hruska's work from 1996 which includes formal authority, personal model, facilitator, delegator and expert. Each teacher was required to fill out the survey as per their experiences regarding a particular course taught. The survey questionnaire comprised 40 items, where participants could express their agreement or disagreement on a 'Five-Point Likert Scale'. The survey was translated from English to

Hindi through back-translation methods to maintain the quality of translations. For confirming the comprehensibility of the questions for Indian respondents, a Hindi version was pilot-tested with 15 participants. The reliability of the five factors was found to be satisfactory or acceptable with Cronbach's alpha between 0.74 and 0.83.

Teachers' readiness to embrace educational technology was assessed using a custom-designed survey with five key dimensions: their willingness to invest time, to learn new skills, to integrate ICT into classroom teaching, to adopt online instruction and learning, and to utilize ICT for lesson planning and student evaluation. The 20-item survey was initially trialed in a pilot study with 25 participants. Responses were measured on a five-point Likert scale, and each scale demonstrated acceptable internal consistency, with Cronbach's alpha coefficients between 0.75 and 0.85. Alongside the survey, focus group discussions were held with 65 randomly chosen teachers, organized into sessions of five participants each. These interviews, lasting around 40 to 50 minutes, featured semi-structured questions exploring teachers' views on their professional roles, educational innovation, and the integration of technology in teaching. All discussions were audio-recorded, transcribed, and systematically coded for further analysis.

Analysis and Findings:

Table 2 displays the average scores reflecting Indian teachers' perceptions of their five key role categories. Generally, Indian teachers favoured the roles of expert, authority, and personal model more than those of facilitator and delegator. Age-based variations were noted: MANOVA results showed that younger teachers (20–30 years old) were less likely to assume expert and authority roles compared to older age groups (*p* < 0.05). In contrast, teachers over 50 were less likely to embrace facilitator and delegator roles compared to their younger counterparts (*p* < 0.05). However, independent samples *t*-tests revealed no statistically significant differences in role perceptions based on gender (*p* > 0.05).

Table-2
Teachers' *roles in a school setting*

Teacher Roles	Authority		Facilitator		Expert		Model		Delegator	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Male $\bar{x}$ (σ)	5.13	0.58	4.75	0.51	5.12	0.66	5.01	0.59	4.65	0.62
Female $\bar{x}$ (σ)	4.74	0.53	5.01	0.71	5.05	0.48	4.92	0.64	5.94	0.58
20–30 $\bar{x}$ (σ)	4.48	0.52	5.12	0.52	4.51	0.51	4.88	0.63	5.07	0.71
31–40 $\bar{x}$ (σ)	4.9	0.64	5.00	0.48	5.05	0.52	5.02	0.53	5.01	0.61
41–50 $\bar{x}$ (σ)	5.03	0.46	4.76	0.47	5.10	0.67	5.05	0.59	4.7	0.58
> 50 $\bar{x}$ (σ)	5.19	0.68	4.3	0.65	5.22	0.4	5.1	0.55	4.23	0.51
Total $\bar{x}$ (σ)	4.93	0.48	4.82	0.52	5.06	0.43	4.99	0.56	4.79	0.55

Cluster analysis was conducted to identify teacher profiles based on their predominant perceptions of teaching roles. The results show that 37% of teachers preferred the expert/authority role, 25% identified with the expert/authority/model role, around 16% supported the facilitator/delegator role,

and 22% favoured a blend of facilitator and expert roles (Source: Latest Education Research, 2023). Additionally, older teachers were more inclined toward the facilitator/delegator role than younger teachers ($p < 0.05$). However, t-test results revealed no statistically significant differences in role perceptions between male and female teachers ($p > 0.05$).

Table 3

Teacher profiles and characteristics	Willingness				
	To invest time	To learn	To use ICT for teaching in the classroom	To adopt online instruction and learning	To use ICT for preparation of lessons and assessment of students
Expert/Authority (37%)		*p < .05*			
Expert/Authority/Model (25%)		*p < .05*			
Facilitator/Expert (22%)		*p < .01*	*p < .05*	*p < .05*	*p < .05*
Facilitator/Delegator (16%)		*p < .01*	*p < .01*	*p < .05*	*p < .05*

Beyond the 'willingness to learn,' no strong connection was found between teachers with expert/authority or expert/authority/model profiles and their readiness to embrace educational technology. Instructors with an expert/authority approach often exhibit a conventional teaching style, asserting control over the classroom, which can create a more detached and impersonal learning environment. On the other hand, teachers with facilitator/expert and facilitator/delegator profiles showed a positive association with their openness to use educational technology. These educators are more inclined to adopt a supportive stance, telling students, "I am here to assist and provide resources."

This approach promotes a more collaborative and open classroom atmosphere, encouraging interaction and knowledge exchange between teachers and students with fewer rigid boundaries as shown in Table 3. The qualitative analysis of interview data provided further insights, revealing that Indian teachers still value authority and expertise. Many stressed that "A teacher should be a subject matter expert" and "Must have thorough knowledge of their discipline." Concerning facilitator and delegator roles, most Indian teachers agreed that educators should act as enablers of student learning. Several also described themselves as "guides," helping students navigate their learning journey. Some teachers mentioned adjusting their roles depending on the subject and students' understanding.

The model role was also considered vital, as many Indian teachers see themselves as key influencers in students' personal growth. Although most expressed interest in learning about educational technology, no notable link existed between teachers who preferred expert/authority roles and their willingness to implement ICT in teaching. Conversely, those favouring facilitator and delegator roles demonstrated greater receptiveness to adopt educational technology.

Discussion:

Roles of Teacher and Adoption of Educational Technology

The study reveals that Indian teachers predominantly value the roles of "expert," "authority," and "model," with no significant gender-based differences in these perceptions. Teachers often adjust their roles depending on instructional goals and student demographics, though each role demands specific skills for effective implementation. Interviews highlighted that many educators still prioritize knowledge dissemination, considering it their duty to impart theoretical and foundational concepts. Younger teachers however, showed a stronger preference for facilitator and delegator roles as compared to their senior colleagues. Findings suggest that teachers with facilitator/expert or facilitator/delegator profiles are more open to adopt educational technology (ET), supporting prior research indicating that modern learning environments necessitate such roles (Bauersfeld, 1995; Brownstein, 2001). Social constructivism emphasizes active learner participation, contrasting traditional education models where teachers held primary responsibility while students remained passive. Research also confirms a strong link between teachers' pedagogical beliefs and their actual ET usage (Dwyer, Ringstaff, & Sandholtz, 1991; Tondeur et al., 2008).

Educational technology enhances learning outcomes and supports measurable academic objectives (Hawkins et al., 1996). It also shifts teaching from instructor-led to student-centred approaches, improving both effectiveness and engagement (Higgins, 2003). Additionally, ET equips students with career-relevant skills, including critical thinking, information analysis, and communication (Chigona & Chigona, 2010). It expands learning beyond classrooms by offering diverse resources, fostering scientific inquiry, and enabling interaction with experts (Means et al., 1994). This study highlights how teachers' perceptions significantly influence ET adoption, aligning with global research. Educators must understand individual learning processes while guiding students effectively (Volman, 2005).

While digital learning environments simplify certain tasks, they also complicate teachers' responsibilities. Educators must select appropriate programs, stay updated, and act as planners, consultants, and assessors. Although technology offers flexibility in student monitoring, it introduces administrative burdens that demand structured solutions. Effective planning and student engagement skills remain crucial.

School Challenges

Several factors influence teachers' adoption of technology, including ICT resource quality, incentives for change (Cox et al., 1999), teacher readiness, confidence, technical support, student perceptions, training quality, leadership, and resource accessibility (Balash et al., 2011; Sherry et al., 2000). Other determinants include computer access, usage frequency, ICT competence, and self-efficacy (Peeraer et al., 2010). However, urban schools often face infrastructure gaps, limited technical support and poor-quality digital resources (Means et al., 2001). Institutional assistance is critical (Balash et al., 2011), as are instructors' attitudes—technology anxiety can hinder adoption (Muller, 2008). Administrative support also plays a key role; its absence may impede classroom technology integration (Naimova, 2008).

Despite ET's potential to revolutionize education, it imposes new demands on teachers, requiring them to transition from traditional methods to facilitator roles that promote active and self-directed learning. Educators must embrace digital literacy to leverage interactive technologies effectively. Access to training, resources and time is essential for teachers to become proficient facilitators. As Nuyen (1995) argues, education should inspire curiosity rather than merely convey facts—a task that demands passionate educators, not just technology.

Barriers to Innovation in India

While India has introduced reforms favouring student-centered learning, many schools struggle to move away from conventional methods, often blending old and new approaches inconsistently. Even when technology is used, it frequently replicates teacher-led instruction through video lectures or online classes, failing to improve student outcomes. Resistance to change among teachers further hampers ET integration, necessitating shifts in mindset. A supportive institutional culture and clear objectives are vital for sustainable transformation.

Traditional teaching norms and India's selective education system also impact ET adoption. Despite investments in hardware, ET is often limited to "demonstration" courses. While ICT infrastructure and e-resources have expanded, teacher training remains inadequate. The Indian government prioritizes education for national development, emphasizing creativity and lifelong learning. However, systematic changes are needed to transform schools into dynamic learning organizations. ET must align with course objectives, learning outcomes, and pedagogy to be effective. Institutions must develop strategic plans based on their vision and pedagogical needs before implementing ET.

Conclusions:

This study examined the responsibilities of Indian teachers and their preparedness to incorporate educational technology (ET) in schools, with a focus on selected institutions in Aligarh. Empirical evidence was evaluated to understand educators' perspectives on ET adoption. The results provided valuable insights into the status of ET implementation in India and the key factors affecting this transition.

Addressing the challenges of modern educational reform requires prioritizing two essential elements: the evolving roles of teachers and their digital skills. Schools must adapt to become dynamic learning organizations that align with the needs of the knowledge-driven economy. Contemporary teaching demands a revised pedagogical approach and broader teacher responsibilities, calling for a new form of educational professionalism that transcends conventional methods and fosters stronger community engagement. The partnership between teachers and students plays a crucial role in shaping knowledge that enhances human capital and strengthens schools as collaborative learning environments. By embracing ET, educators can refine their instructional skills, boosting both efficiency and outcomes.

Recent research underscores ET's transformative influence on Indian education. The National Digital Library of India (NDLI) serves as a key platform, providing extensive academic resources for teachers and students. Programs like the NDLI Club further encourage interactive learning, aligning with the National Education Policy 2020's emphasis on fostering student interests and abilities. Another notable example is Kerala's KITE initiative, which has successfully integrated ET through digital classrooms and teacher training in ICT, elevating educational standards in the state. In summary, India's ET adoption is advancing, with teachers at the forefront of this change. By enhancing digital literacy and redefining educational roles, schools can effectively address the demands of an evolving academic landscape.

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