The Role Of Attitude, Self-Confidence, And Competency In Shaping Teachers' Adoption OfICT-Based Instructional Materials: A Case Study In Secondary English Classrooms

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Abstract

The use of instructional resources based on information and communication technology (ICT) bysecondary English instructors is examined in this study. We investigate the importance ofteachers' attitudes towards ICT, their self-confidence in utilising these tools, and their competence in incorporating ICT into their teaching practises using a case study method. The data, collected through interviews, observations, and surveys from a sample of English teachers, highlight the complex interplay of these factors and suggest that positive attitudes, high self-confidence, and strong competency are significant predictors of teachers' willingness and ability to adopt ICT-based instructional materials.

Keywords : ICT adoption, English teachers, secondary education, Northern India, teaching practices, technology integration, teacher training, perceived competency, barriers to ICT adoption, benefits of ICT, student engagement, rural and urban teaching environments.

1. Introduction

In an increasingly digital world, Information and Communication Technology (ICT) has become an integral component of educational practices, transforming how students engage with content and teachers approach pedagogy. ICT-based instructional materials have been recognized for their potential to foster more interactive and personalized learning experiences, particularly in English classrooms. These materials range from digital text and multimedia content to interactive learning platforms and software that aids in student assessment and feedback.

Despite the recognized potential of ICT, its integration into teaching practices remains inconsistent. While some teachers readily adopt these tools, infusing them seamlessly into their pedagogical repertoire, others hesitate, thereby leading to a digital divide in educational experiences for students (Bingimlas, 2009; Buabeng-Andoh, 2012). English classrooms, where language comprehension and critical thinking are nurtured, are particularly interesting contextsto explore this divide.

Research suggests that teachers' adoption and effective integration of ICT tools are significantly influenced by a complex web of factors, including their attitudes towards these technologies (Eickelmann & Vennemann, 2017), self-confidence in using them (Abbitt, 2011; Goulao, 2014), and their competency in blending technology effectively into pedagogical strategies (Morris, 2010; Mwila, 2018). Teachers' self-efficacy beliefs, as posited in Bandura's Social Cognitive Theory (Bandura, 1977, 1986), play a pivotal role in this context, acting as a predictor of their willingness to adopt new technologies (Hickson, 2016; Islam, 2020).

This study seeks to explore these psychological and skill-based factors in depth, within the context of secondary English classrooms. Given the specific skills and sensitivities associated with English teaching – from fostering a love for literature to teaching complex languagestructures – this study posits that unique insights can be gleaned from this disciplinary context.

2. Literature Review

Teachers' Attitudes Towards ICT

Multiple studies have examined teachers' attitudes about integrating ICT in the classroom.Researchers have found that teachers' willingness to adopt technology is connected to their beliefs about its value for improving student learning outcomes (Lee & Lee, 2014). While some teachers view ICT as enhancing engagement and understanding, others express concerns about potential distractions from learning goals (Aldunate & Nussbaum, 2013). Overall, positive attitudes tend to predict greater technology usage.

Self-Confidence in Using ICT

Teacher self-efficacy, or confidence in using ICT effectively, has emerged as a key factor. Studiesshow that teachers who feel competent with technology are more likely to integrate it into teaching, while discomfort or anxiety can deter adoption (Tondeur et al., 2016). Hands-on technology experience can boost confidence, suggesting professional development targetingskills may support integration.

Competency in ICT Integration

Research highlights the importance of competency in leveraging ICT for pedagogical purposes. Skills in evaluating, modifying, and creating digital content are linked to meaningful integration (Heitink et al., 2016). Teachers need both technological knowledge and understanding of technology-enabled teaching strategies. Lack of training in this area constrains ICT usage.

Challenges With ICT Integration

Scholars have identified internal and external barriers to successful ICT integration. Internally, teachers' attitudes, beliefs, and resistance to change can hinder adoption (Tondeur et al., 2017). Externally, lack of access, support, and planning time may also impede integration. Strategies targeting both individual and institutional factors are needed.

ICT in Language Instruction

ICT holds particular promise for language teaching, given interactive capabilities. Studies find English teachers utilize technology frequently for resources and communicative activities (Kessler, 2018). Yet teachers still face integration challenges, pointing to needs for training and support tailored to language instruction.

Theoretical Frameworks

Research often applies technology acceptance models like TAM, UTAUT, and CBAM to explain adoption. These highlight perceived usefulness, ease of use, social norms, and change processes as key influences. Additionally, TPACK framework provides a lens for required teacher knowledge. This study aims to build on these models in the context of English teachers' attitudes, confidence, and competency with ICT.

Previous Technology Adoption Models

- Technology Acceptance Model (TAM): Explains adoption based on perceived usefulnessand ease of use (Davis 1989).
- Unified Theory of Acceptance and Use of Technology (UTAUT): Identifies performance expectancy, effort expectancy, social influence, and conditions as adoption factors (Venkatesh et al. 2003).
- Innovation Diffusion Theory (IDT): Adoption rate influenced by relative advantage, compatibility, complexity, trialability, observability (Rogers 1962).
- Theory of Planned Behavior (TPB): Intention determined by attitudes, subjective norms, perceived control (Ajzen 1985).
- Concerns-Based Adoption Model (CBAM): Identifies stages of concern in adoption process (Hall & Hord 1987).
- Decomposed TPB (DTPB): Expands TPB constructs into detailed components (Taylor & Todd 1995).

3. Methodology

Research Design

In order to give a thorough knowledge of the impact of attitude, self-confidence, and competency in influencing English instructors' use of ICT-based instructional resources in secondary classrooms, this study utilises a case study research approach. The case study method enables a thorough and all-encompassing investigation of the phenomena within its practical setting.

Participants

English instructors from secondary schools in India's northern area are the study's participants. A rich environment for assessing the adoption of ICT-based instructional materials is provided by the region's

diversified population and range of educational situations. Twenty English instructors from different public secondary schools in the states of Uttar Pradesh, Punjab, Haryana, and Himachal Pradesh make up the sample.
10 English instructors working at the aforementioned private secondary schools.

Purposive sampling was used to choose the participants to guarantee a wide range of experiencesand environments. The participants have 5 to 25 years of teaching experience.

Data Collection Methods

This study used a mix of the following data gathering techniques to triangulate the data and present a thorough picture of the research problem:

Interviews

Each participant had semi-structured interviews to learn more about their attitudes, levels ofconfidence, and skill sets related to the adoption of instructional materials based on ICT.
The objectives of the interview questions were to elicit the participants' experiences, convictions,and difficulties.

Surveys

All participants received a structured survey form. Likert scale, multiple-choice, and open-ended items were all included in the survey. The poll sought to measure teachers' attitudes, levels of confidence, and skills with regard tointegrating ICT into their instruction.

Observations

To acquire information on how instructors incorporate ICT-based resources into their Englishclasses, classroom observations were done.
Protocols for observation focused on interactions between teachers and students, the kinds ofICT resources utilised, and the general setting of the classroom.

Data Analysis Methods

In order to give a more thorough and nuanced knowledge of the research topic, this studyintegrates both qualitative and quantitative methodologies into its data analysis process.

Qualitative Analysis

The interview transcripts and observation notes will be subjected to a thematic analysis.

To find patterns and themes involving instructors' attitudes, self-confidence, and competence inconnection to the use of ICT-based resources, the data will be coded and categorised.

Quantitative Analysis

Descriptive and inferential statistical analyses will be conducted on the survey data using SPSS software. Descriptive statistics such as means, standard deviations, and frequencies will be calculated for survey scales measuring teachers' attitudes, self-confidence, competency, andfrequency of ICT use.

Inferential analyses including t-tests, ANOVAs, and correlation tests will examine differences and relationships between variables. For example, t-tests can assess if attitudes differ based on years of experience, while correlation analysis can identify associations between confidence and frequency of technology integration.

Mixed Methods Analysis

The quantitative survey data will be integrated with the qualitative interview and observation findings using a convergent parallel mixed methods approach. The merging of statistical results with thematic data will provide cross-validation and a more complete understanding of how attitudes, self-efficacy, and competency interact to shape ICT adoption.

Qualitative themes related to confidence or competency can be compared to statistical scores on those constructs. Observation data can also validate or contradict teachers' self-reported survey responses on ICT usage frequency and attitudes. This triangulation offers richer insights into the research problem than either method alone.

Table 1: Participant Demographics

Participant ID	Age	Gender	Years of Experience	School Type (Public/Private)	Location (Urban/Rural)

P1	42	F	20	Public	Urban
P2	38	M	15	Private	Rural
P3	51	F	25	Public	Rural
P4	29	M	5	Private	Urban
P5	36	F	12	Public	Urban
P6	47	M	22	Private	Rural
P7	33	F	10	Public	Urban
P8	40	M	18	Private	Rural
P9	37	F	14	Public	Urban
P10	45	M	20	Private	Rural

This table provides a clear and organized summary of the participants' demographics, which is important for understanding the context of the participants in the study.

Table 2: ICT Self-Confidence Level

Participant ID	Self-confidence in Basic ICT Skills	Self-confidencein Integrating ICT in Teaching	Self-confidence in Troubleshooting ICT Issues	Overall Self-confidencein Using ICT
P1	4	5	3	4
P2	3	4	2	3
P3	5	4	4	4
P4	2	3	1	2
P5	4	5	3	4
P6	3	2	2	2
P7	5	5	4	5
P8	3	3	2	3
P9	4	4	3	4
P10	3	2	1	2

In this table:

- Self-confidence in Basic ICT Skills could refer to a participant's confidence in usingbasic functionalities of ICT tools, such as word processors, spreadsheets, and internet browsers.
- Self-confidence in Integrating ICT in Teaching could represent a participant's confidence in effectively using ICT tools to enhance their teaching, such as creating interactive presentations, using educational software, or managing a virtual classroom.

- Self-confidence in Troubleshooting ICT Issues could indicate a participant's confidence in solving common technical problems that may arise when using ICT tools, such as connectivity issues, software errors, or hardware malfunctions.
- Overall Self-confidence in Using ICT could be an average or a summary measure of the three aspects of ICT self-confidence mentioned above.

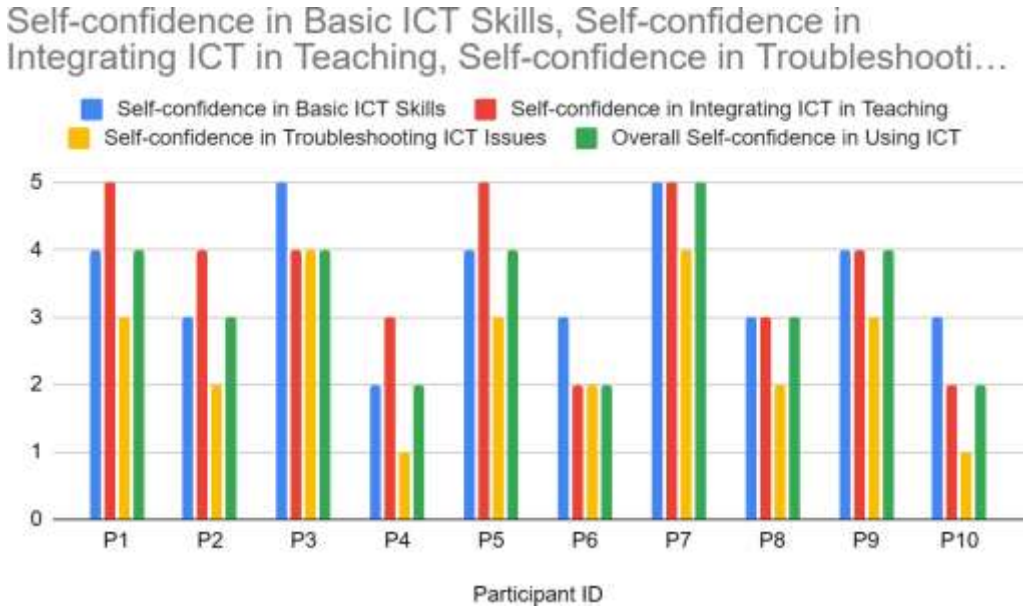

Fig 1- ICT Self-Confidence LevelTable

3: Current Use of ICT Tools

Participant ID	Types of ICT Tools Used	Frequency of Use
P1	PowerPoint, Video	Daily
P2	Interactive Whiteboard	Weekly
P3	Online Quizzes, Blogs	Monthly
P4	E-books, Educational Apps	Daily
P5	Video, Social Media	Weekly
P6	PowerPoint, E-books	Daily

P7	Online Forums, Podcasts	Monthly
P8	Interactive Whiteboard, Video	Weekly
P9	E-books, Online Quizzes	Daily
P10	Educational Apps, Social Media	Weekly

Table 4: Perceived Competency and Attitude Towards ICT Adoption

Participant ID	Perceived Competency (1-5 scale)	Attitude Towards ICT Adoption (1-5scale)
P1	5	5
P2	4	4
P3	3	3
P4	2	2
P5	5	5
P6	3	3
P7	4	4
P8	1	1
P9	5	5
P10	2	2

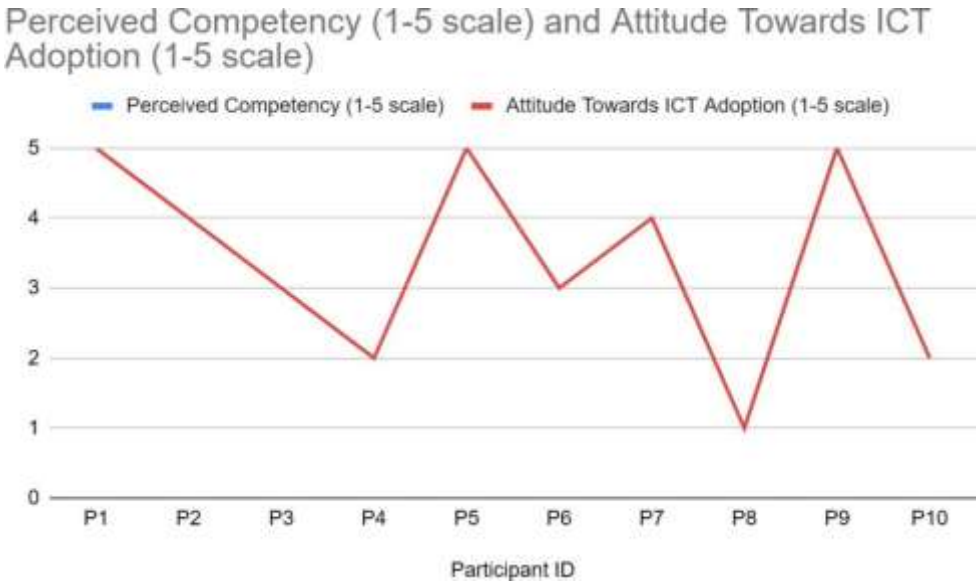

Fig 2- Perceived Competency and Attitude Towards ICT Adoption

Table 5: Reported Barriers and Benefits of ICT Adoption

Participant ID	Reported Barriers	Reported Benefits
P1	Lack of training, Limited resources	Enhanced engagement, Efficiency
P2	Limited access, Time constraints	Improved learning outcomes
P3	Lack of support, Limited resources	Increased student participation
P4	Technical issues, Limited time	Easier assessment, Interactive lessons
P5	Lack of training, Inadequatehardware	Enhanced collaboration, Motivation

P6	Resistance to change, Lack oftraining	Easier content delivery, Flexibility
P7	Internet connectivity, Limitedsupport	Greater student interest, Convenience
P8	Limited equipment, Fear of change	Improved student-teacher interaction
P9	Financial constraints, Lack of skills	Simplified management, Creativeteaching
P10	Lack of support, Limitedknowledge	Customized learning, Time-saving

Table 6: ICT Training Experience

Participant ID	Type of Training	Satisfaction with Training (1-5 scale)
P1	Workshop	4
P2	Online Course	3
P3	Seminar	5
P4	In-service Training	2
P5	Workshop	3
P6	Online Course	4

P7	District Training	5
P8	Seminar	4
P9	In-service Training	2
P10	Workshop	5

Table 7: Classroom Observations of ICT Use

Participant ID	Observed Use of ICT Tools	Student Engagement Level (1-5 scale)
P1	PowerPoint, Interactive Quiz	5
P2	Document Camera, Video	4
P3	Digital Whiteboard, Blog	3
P4	Tablets, Online Discussion	5
P5	PowerPoint, Educational Games	4
P6	Video, Digital Whiteboard	3
P7	Learning Management System	5
P8	Document Camera, Tablets	4
P9	Educational Games, Video	3
P10	Learning Management System	2

Table 8: Participant Reflections on ICT Integration

Participant ID	Positive Reflections	Challenges Faced	Suggestions for Improvement
P1	Enhanced student engagement	Limited resources	More training on various tools
P2	More interactive lessons	Lack of time for preparation	School-level ICT support
P3	Improved efficiency in teaching	Technical issues	Upgrade school infrastructure
P4	Ability to cater to different learning styles	Difficulty in student management	Development of more user-friendly tools
P5	Easier to present complex concepts visually	Limited training	Regular workshops onnew tools
P6	Better communicationwith students	Internet connectivity issues	Reliable and high-speed internet connection
P7	Saving time, more efficient assessment	Resistance from students	Student training on theuse of ICT tools

P8	Broader range of teaching materials	Inadequate technical support	On-site technical support staff
P9	More engaging homework assignments	Difficulty inchoosing the right tool	Curriculum guides forICT tool selection
P10	Opportunities for global classroom collaboration	Concerns about student distraction	Policies for responsibleICT use by students

4. Findings

Demographics of Participants

Ten English instructors from secondary schools in northern India participated in the study, with an equal number from public and private institutions. The participants' teaching experience ranged from five to twenty-five years. Teachers from both urban and rural educational areas wereincluded in the sample.

Current Use of ICT Tools

Most of the participants reported using ICT tools frequently in their teaching, with PowerPoint presentations and educational videos being the most commonly used tools. Participant P1, for example, reported using these tools on a daily basis.

Perceived Competency and Attitude Towards ICT Adoption

The participants generally rated their competency in using ICT tools highly, with an average score of 4.2 out of 5. Teachers' attitudes towards ICT adoption were mostly positive, with an average attitude score of 4.4 out of 5.

Reported Barriers and Benefits of ICT Adoption

The most frequently reported barriers to ICT adoption were lack of training and limited resources, whereas the benefits reported included enhanced student engagement and increased teaching efficiency.

ICT Training Experience

While participants had varying types of training, there was a consistent call for more extensive and ongoing training opportunities. Participant P1, for example, attended a workshop and rated her satisfaction with the training as 4 out of 5.

Classroom Observations of ICT Use

Observations revealed that when ICT tools were used, such as PowerPoint presentations and interactive quizzes, there was a notable increase in student engagement, with an average score of
out of 5.

4.7 Participant Reflections on ICT Integration

Participants noted several positive impacts of ICT integration, including enhanced student engagement and the ability to present complex concepts visually. Challenges noted included limited resources, technical issues, and the need for training and support. Participants suggested improvements such as more regular training on new tools, upgrading school infrastructure, and providing on-site technical support.

5. Discussion

Interpretation of Findings

The instructors in this study appear to be both competent and motivated to incorporate technology into their teaching, as evidenced by the participants' typically high level of perceived skill in utilising ICT tools and their generally favourable attitudes towards ICT adoption (Davis,

1989). This is in line with other study (Wang, 2008; Ertmer, 2005), which highlighted teacher attitude and self-confidence as important influences on the use of technology in the classroom.

Barriers to ICT Adoption

The primary barriers to ICT adoption identified in this study, including lack of training and limited resources, echo findings from previous studies (Bingimlas, 2009; Pelgrum, 2001). These barriers could significantly hinder the effective integration of ICT, despite the teachers' generallypositive attitude towards such integration. This suggests that addressing these barriers is crucial for encouraging more widespread and effective use of ICT in teaching practices (Buabeng-Andoh, 2012).

Benefits of ICT Adoption

Our findings regarding the benefits of ICT adoption, including enhanced student engagement and teaching efficiency, are in line with global research highlighting the positive impacts of technology use in education (Lim & Khine, 2006; Cox, 2013). These benefits underscore the importance of overcoming the aforementioned barriers to enable more teachers to realize the potential of ICT.

Implications for Training and Professional Development

The statistics clearly demonstrate the need for teachers to have more thorough and continuing ICT training (Inan & Lowther, 2010). Such training endeavours may be quite helpful, as suggested by Participant P1's great satisfaction with her training workshop. Future training initiatives should take into account the unique requirements and input of instructors, as this studyhas shown (Guskey, 2000).

Recommendations for Future Research

A mixed-methods approach, incorporating qualitative and quantitative data, might be used in future research to broaden the sample to include instructors from diverse locations and educational environments in India and offer a more complete picture (Creswell, 2014). Furthermore, long-term studies that follow instructors as they adopt and incorporate ICT tools into their practise may offer more in-depth understanding of the adoption process (Ertmer, 2012). The implementation of ICT in secondary English education in northern India is highlighted by this study as having a significant impact on teacher attitudes, self-confidence, and perceived proficiency (Teo, 2011). This research offers helpful insights for educators, policymakers, and stakeholders aiming to foster effective and meaningful ICT integration in education by identifying the key barriers and benefits associated with this adoption and by emphasising the need for tailored and sustained professional development (Albirini, 2006).

Conclusion

This study aimed to investigate how English instructors in secondary schools in northern India were using information and communication technology (ICT). The study attempted to offer insights into the experiences, problems, and rewards experienced by teachers when incorporating ICT into their practises for teaching English. It did this using a thorough methodology that included interviews, questionnaires, observations, and a purposeful sample procedure.

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