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Role of Technological Self-Confidence in Enhancing Classroom Innovation: A Study among Secondary Teachers in Chhattisgarh

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Introduction

Rapid advances in information and communication technologies (ICT) are reshaping classroom practices at the secondary level. With NEP 2020 emphasising digital pedagogy, teachers are expected not only to use technology but to innovate—through digital lesson design, multimedia integration, online assessments, virtual labs, simulations and collaborative learning platforms. However, many teachers still hesitate to adopt new technologies due to limited confidence in their own digital capabilities. Technological self-confidence—teachers' belief in their ability to effectively use digital tools—has emerged as a crucial psychological factor driving classroom innovation. This study investigates how technological self-confidence influences innovative teaching practices among secondary teachers in Chhattisgarh, a state where digital infrastructure is expanding but uneven across districts.

Theoretical Background of the Study

The study is grounded in the following theoretical frameworks:

a) Self-Efficacy Theory (Bandura, 1977)- Self-efficacy refers to individuals' belief in their capability to perform specific tasks. Technological self-confidence aligns with this concept, predicting teachers' willingness to adopt emerging tools.

b) Technology Acceptance Model (TAM)- TAM suggests that perceived usefulness and perceived ease of use influence technology adoption. Technological self-confidence shapes both perceptions, enhancing readiness for innovation.

c) Diffusion of Innovations Theory (Rogers, 2003)- Teachers with high technological confidence are more likely to be early adopters, experimenting with digital tools and influencing peers.

d) Constructivist Learning Theory- Innovative classrooms encourage active learning, inquiry, and collaboration. Technology-enabled pedagogy supports these principles, and teachers' confidence determines their ability to implement them.

Significance of the Study

- **Policy relevance:** Supports the state's digital education initiatives by identifying teacher-level factors that drive innovation.
- **Professional development:** Highlights the need for teacher training programs that build confidence rather than only providing technical skills.
- **Educational quality:** Links technological empowerment with improved student engagement and learning outcomes.
- **Equity concerns:** Provides insights into district-level disparities in digital readiness.

Statement of the Problem

Despite the availability of ICT resources in many secondary schools, innovative classroom practices remain inconsistent. Teachers frequently report hesitation, fear of errors, lack of confidence, or reliance on traditional teaching methods. The core problem is to understand whether and how technological self-confidence influences the extent and quality of

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classroom innovation among secondary teachers in Chhattisgarh.

Operational Definition of Key Terms

- **Technological Self-Confidence:** Teachers' self-perceived ability to use, troubleshoot, and integrate digital tools effectively for teaching purposes.
- **Classroom Innovation:** Creative and effective use of ICT-based strategies—digital content, flipped learning, simulations, online assessments, blended learning, and student-centred activities.
- **Secondary Teachers:** Teachers teaching classes 9th to 12th in government, aided, or private schools in Chhattisgarh.
- **ICT Tools:** Hardware, software, online platforms, mobile applications, digital content repositories, and interactive devices used for educational purposes.

Variables

- Independent Variable- Technological Self-Confidence
- Dependent Variable- Classroom Innovation (measured through frequency, quality, and diversity of innovative ICT practices)

Objectives of the Study

1. To assess the level of technological self-confidence among secondary teachers in Chhattisgarh.
2. To examine the extent of classroom innovation practices using ICT.
3. To determine the relationship between technological self-confidence and classroom innovation.
4. To analyze demographic differences (gender, experience, school type, district) in technological confidence and innovation.
5. To suggest strategies to enhance technological confidence and innovative teaching behaviour.

Research Questions

1. What is the level of technological self-confidence among secondary teachers in Chhattisgarh?
2. How frequently and effectively do they adopt ICT-based classroom innovations?
3. Is there a significant relationship between technological self-confidence and classroom innovation?
4. Do demographic variables influence this relationship?
5. What interventions can further strengthen teachers' confidence for digital pedagogy?

Scope of the Study

The study focuses exclusively on secondary teachers within Chhattisgarh. It covers government, private and aided schools, examining psychological, technological and pedagogical aspects of innovation. The study emphasises correlation, not causation.

Delimitation and Area

- Geographically limited to selected districts of Chhattisgarh.
- Restricted to secondary-level teachers only.
- Classroom innovation measured through self-reported data and limited observation.
- Does not include primary or higher education teachers.

Review of Literature

1. **Mishra & Koehler (2006)** – Introduced the TPACK model, highlighting integration of technology, pedagogy and content as a mark of teacher innovation.
2. **Ertmer (2010)** – Found that teacher beliefs and confidence are stronger predictors of technology use than availability of hardware.

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3. **Prasad (2018)** – Indian study showing that digital confidence influences teachers' use of ICT for designing interactive lessons.
4. **Sharma & Verma (2020)** – Reported that teachers with higher ICT self-efficacy engage more in blended learning in Central India.
5. **Nayak (2022)** – Noted that lack of confidence, not training, is the main barrier in EdTech adoption among rural and semi-urban teachers.

Research Gap

- Limited studies specifically address secondary teachers in Chhattisgarh.
- Few empirical works link self-confidence with innovation indicators such as flipped classrooms, digital lesson design, or simulations.
- Most studies focus on ICT skills rather than psychological readiness, leaving this gap for exploration.

Research Methodology

- Research Design- A descriptive survey design complemented with correlational analysis to examine relationships between variables.
- Population- All secondary school teachers across government, private, and aided schools in Chhattisgarh.
- Sample- A sample of 300 teachers from 6 districts (50 teachers per district).
- Sampling Method- Multi-stage sampling: district selection → school selection → random selection of teachers.
- Sources of Data
  - **Primary data:** questionnaires, observation schedules and interviews.
  - **Secondary data:** policy documents, digital education reports, school ICT audits.

Research Tools

1. **Technological Self-Confidence Scale** (5-point Likert) – measures skills, ease of use, troubleshooting ability, fearlessness in experiment, and autonomy.
2. **Classroom Innovation Index** – measures use of digital resources, multimedia, online activities, blended learning, interactive apps.
3. **Observation Checklist** (optional) – for classroom visits.
4. **Interview Guides** – for qualitative insights on barriers and motivations.

Data Collection Procedure

- Obtain permissions from DEO, principals and schools.
- Administer structured questionnaires during school visits or online.
- Conduct brief interviews with selected teachers.
- Ensure confidentiality and voluntary participation.
- Collect data within a 4–6 week period.

Statistical Analysis

- **Descriptive statistics:** mean, SD, frequency distribution.
- **Correlation analysis:** to examine the relationship between self-confidence and innovation.
- **t-tests / ANOVA:** to test demographic differences.
- **Regression analysis:** to identify predictive power of technological self-confidence.
- **Qualitative content analysis** for interview responses.

Findings of the Study

- Majority of teachers show moderate technological self-confidence.

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- Teachers with higher confidence integrate more digital tools such as videos, simulations and online quizzes.
- Lack of training, poor infrastructure and fear of failure restrict innovation.
- Younger teachers display higher confidence but older teachers show more pedagogical creativity.
- Teachers in private schools demonstrate greater digital readiness due to better resources.

Summary

The study reveals a strong link between technological self-confidence and classroom innovation, highlighting psychological readiness as a central factor of digital pedagogy.

Conclusions

- Self-confidence significantly predicts teachers' ability to design innovative classrooms.
- Infrastructure alone cannot ensure digital innovation without building teacher belief systems.
- Supportive leadership and continuous mentoring influence confidence levels.

Recommendations

1. **Confidence-oriented ICT training** focusing on hands-on, low-risk experimentation.
2. **Peer mentoring groups** for digital lesson sharing.
3. **School-level ICT champions** to support and troubleshoot.
4. **Digital micro-courses** for ongoing skill development.
5. **Provision of accessible digital tools** in under-resourced schools.
6. **Recognition of innovative teachers** to motivate others.

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