CHAPTER 5

FINDINGS, IMPLICATIONS, SUGGESTIONS AND CONCLUSION

5.1 Major Findings of the Study

- Students who received ICT-mediated teaching (using videos and PowerPoint presentations) showed significantly higher academic achievement as compared to those taught using traditional methods of teaching. Post-test scores of the experimental group were consistently higher, indicating better conceptual understanding through ICT-mediated teaching .
- ICT tools such as animations and simulations helped students grasp abstract Physics concepts (e.g., work, energy, force) more effectively. Thus, reducing misconceptions regarding many important abstract concepts.
- The positive impact of ICT-mediated teaching was observed across all students' ability levels—high, average, and low achievers—with notable gains among lower-performing students who benefited from self-paced and visual learning support.
- The study outcomes align with the educational objectives outlined in NEP 2020 and NCF-SE 2023, which promote the use of technology to foster inquiry-based and competency-driven science education.
- The use of ICT mediated teaching showed significant difference in learning outcomes among the students, indicating that ICT tools are effective.

5.2 Conclusion of the Study

Based on the findings presented and discussed, the researcher made the following conclusions:

- The findings of this study clearly demonstrate that ICT-mediated teaching has a positive and significant effect on the academic achievement of Class 9th students in Physics. The use of digital tools such as simulations, animations, and interactive presentations not only enhanced students' conceptual understanding but also increased their engagement, motivation, and overall interest in learning physics. Compared to traditional teaching methods, ICT integration provided a

more student-cantered and visually enriched learning experience that catered to diverse learning styles and needs.

- ❖ The pre-test scores of both the groups were not significantly different, but post-test results, however, sited a wide margin with the treatment group performing better. It means the experimental group showed better performance in academic achievement as compared to the control group. The result therefore shows the efficacy of ICT – Mediated teaching in enhancing better performance in Physics among students.
- ❖ There is a significant difference between the mean academic achievement scores of the control and experimental groups during pre- and post-tests, thereby proving the effect their respective teaching methods.

5.3 Educational Implications

5.3.1 For Teachers

- ✓ Teachers should integrate ICT tools such as simulations, video lessons, and interactive presentations into Physics to make abstract concepts more concrete and engaging.
- ✓ The findings highlighted the importance of continuous training of teachers in the effective use of digital resources, software, and virtual labs to enhance teaching quality.
- ✓ ICT mediated teaching methods encourages teachers to move from lecture-based instruction to more interactive, student-cantered strategies that promote inquiry, exploration, and problem-solving.
- ✓ ICT mediated teaching provides platforms for quick formative assessments, data tracking, and personalized feedback, helping teachers better understand students' learning needs.
- ✓ Teachers can enhance the Physics curriculum by incorporating real-life applications, virtual experiments, and multimedia content aligned with NEP 2020 and NCF-SE 2023.

5.3.2 For Students

- ✓ ICT-mediated learning helps students visualize and interact with complex Physics concepts, leading to deeper understanding and higher academic performance.
- ✓ The use of multimedia content and interactive tools makes Physics more interesting, encouraging with active participation and reducing fear or disinterest in the subject.
- ✓ Exposure to ICT tools helps students acquire essential digital skills that are critical for future academic and career opportunities in a technology-driven world.
- ✓ ICT mediated teaching allows students to learn at their own pace, revisit content, and receive differentiated instruction, supporting both advanced learners and those needing remediation.
- ✓ Through repeated exposure and interactive learning, students retain concepts longer and perform better in assessments, especially when traditional methods fall short.

5.4 Suggestions for Further Research

- Future studies could be conducted across different states or regions to examine whether the effectiveness of ICT-mediated teaching varies based on demographic, socio-economic, or infrastructural factors.
- Similar research can be extended to other science subjects (such as Chemistry or Biology) or different grade levels (e.g., Classes 8 or 10) to explore the broader impact of ICT in science education.
- Researchers may conduct long-term studies to assess the sustained impact of ICT-mediated teaching on students' academic performance, interest, and conceptual retention over time.
- Comparative studies can be undertaken to evaluate the relative effectiveness of different ICT tools—such as simulations, virtual labs, AR/VR, or educational apps—in enhancing learning outcomes in physics.
- Further research could investigate how ICT-mediated teaching influences higher-order thinking skills, such as problem-solving, reasoning, and scientific inquiry among students.

- Studies focusing on teachers' readiness, attitudes, and competence in using ICT tools effectively can provide valuable insights into professional development needs.
- Investigating the challenges and barriers (e.g., infrastructure, access, training) in ICT implementation can help policymakers and educators develop targeted interventions.
- Future research could explore the impact of blended learning models (combining ICT with traditional methods) on academic achievement and engagement in physics education.
- Studies may also focus on how ICT tools can be tailored to support inclusive education, especially for students with special needs or learning disabilities in science classrooms.