A STUDY OF THE EFFECT OF ICT ON THE ACADEMIC ACHIEVEMENT OF CLASS 6 STUDENTS IN SOCIAL SCIENCE

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DECLARATION

I am **Raja Ganesh**, certify that the work embodied in this dissertation is my own Bonafide work carried out by me under the supervision of **Dr. Sanjay Kumar Pandagale**, Associate Professor, Department of Education, Regional institute of Education, Bhopal and has not formed the basis for the award of any degree, diploma, associateship, fellowship, titles in this or any other university or other institutions of higher studies. I further, declare that the material obtained from other sources has been duly acknowledged in the thesis.

Raja Ganesh.

Place: RIE, Bhopal

Date: 17/6/25

Raja Ganesh
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CERTIFICATE

This is to certify that Raja Ganesh, student of three-year integrated B.Ed.-M.Ed. course in the academic year of 2022-25 of Regional Institute of Education (NCERT), Bhopal has worked under my guidance and supervision for the dissertation "A study of the effect of ICT on the academic achievement of class 6 students in social science". I further certify that this work is original and worthy of submission in fulfilment of the requirement of the degree of B.Ed.-M.Ed. (integrated) of Barkatullah University, Bhopal, Madhya Pradesh.

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List of figures and Tables

List of Figures

List of Tables

Abbreviations

Abbreviation	Full Form
MoE	Ministry of Education
NEP 2020	National Education Policy 2020
NCERT	National Council of Educational Research and Training
NCF-SE	National Curriculum Framework for School Education
CBSE	Central Board of Secondary Education
RTE	Right to Education
UNESCO	United Nations Educational, Scientific and Cultural Organization
ICT	Information and Communication Technology
IT	Information Technology
UMANG	Unified Mobile Application for New-Age Governance
DIKSHA	Digital Infrastructure for Knowledge Sharing
NMEICT	National Mission on Education through ICT
CSC	Common Service Centre
NKN	National Knowledge Network
NDLI	National Digital Library of India
PMGDISHA	Pradhan Mantri Gramin Digital Saksharta Abhiyan
NDLM	National Digital Literacy
SWAYAM	Study Webs of Active-Learning for Young Aspiring Minds
MOOC	Massive Open Online Courses
DTH	Direct-To Home
DMS	Demonstration Multipurpose School

TABLE OF CONTENTS

CHAPTER 1
INTRODUCTION

1.1.0 Background of the Study

The incorporation of Information and Communication Technology (ICT) in education is a crucial focus outlined in Section 23. 6 of the National Education Policy (NEP) 2020. ICT is instrumental in modernizing the education by facilitating interactive, adaptable, and tailored learning experiences. It encourages student participation, improves access, and aids teachers in applying creative teaching methods. Clause 24. 4 (d) of NEP 2020 highlights the importance of building a robust collection of digital educational resources. ICT tools support educators in offering accurate explanations, tailored assistance, and thorough evaluations. Consequently, social sciences education becomes increasingly engaging, accessible, and intellectually enriching.

In the realm of social sciences education, ICT resources are vital for addressing various learning requirements. Digital platforms, multimedia resources, and online tools create opportunities for enhanced classroom instruction. These technologies allow teachers to convey intricate concepts in engaging and straightforward ways, thereby making education more effective. Conventional teaching strategies in social sciences often fail to accommodate the diverse learning preferences of students. ICT tools empower teachers to create interactive and student-focused activities that foster deeper comprehension. By integrating simulations, digital narratives, and geographic information systems, learners can investigate historical events, cultural studies, and geographical phenomena in a more engaging way. ICT has positive impacts on teaching teaching-learning process and the provision of any educational content with only one click (Moore, 2013). The ICT platforms i.e., the internet provide great opportunities for students to learn anytime, anyplace as well as teachers may benefit from its effectiveness in the classrooms and they may develop digital culture (Michael, 2011). Through the wide use of ICT, the transfer of knowledge and skills to a larger number of students is possible within no time (Smith et al., 2005; ven Zanden, 2023). Information and Communication Technology (ICT) is an effective way of delivering education to the masses as it is a lost cost (O, Neill et al., 2004; Feng & Qi, 2024). Any digital or virtual university can provide digital education on a large basis with limited

human resources (Gladeieux,2000; Audi et al., 2021). Information and Communication Technology (ICT) can be managed in any location, at any time, with no need to travel from one place to another and the learners can spend the saved time for their learning (Adedara & Onwuegbuzie, 2014; Ash, 2009; Abulrub & Attridge, 2011).

Upcoming technologies such as immersive settings, digital mapping, and visualization tools improve analytical abilities and critical thinking. Interactive platforms like Google Earth and Bhuvan provide fresh insights into spatial analysis and socio-economic studies. These resources encourage inquiry-based learning, allowing students to actively investigate and assess real-world challenges.

1.2.0 Social Science

Social science, as an academic field, is broad and complex both in terms of the scope of study and the complexity of the subject matter. Social science is unique from the natural sciences which focus on the physical and biological world, while social science concentrates on the human experience, examining how individuals interact, organize themselves, and give meaning to their lives. In its simplest form, social science is the scientific study of society. As a discipline, social science relies on systematic methods of inquiry to understand and explain human behaviour, social structures, cultural contexts, and systemic forces that have shaped our world. It seeks to answer fundamental questions about why societies function the way they do, what drives human actions, and how various social, economic, and political systems operate. Social science examines individuals, communities, and societies, exploring their interactions with each other and their environments (built, technological, and natural). social science utilizes rigorous research methodologies, data collection, and analysis to develop theories and draw conclusions. It aims for objectivity and empirical evidence wherever possible. Key features of social science involve understanding of how individuals relate to one another, form groups, and establish social norms and institutions. It examines the institutions that shape human relationships, including governments, economic structures, educational systems, and cultural traditions. Social science tries to explain a broad array of phenomena in society, from economic development and unemployment to political regimes, cultural changes, and the determinants of happiness or war. Social Science is not just an academic subject; it is a fundamental pillar for human and societal development. It nurtures thoughtful, informed, and responsible individuals who can

contribute meaningfully to society. In an era of rapid social, economic, and environmental change, the importance of Social Science is more vital than ever.

1.2.1 Branch of Social Science

The field of social science is incredibly diverse, encompassing a wide array of disciplines, each offering a unique lens through which to analyse human society. Some of the major branches include:

1) **Anthropology** is the study of humanity, encompassing human behaviour, cultural relations, and the evolution of humanity. It often uses ethnographic methods to understand how different groups create and give meaning to their social world.

2) **Economics** is the study of how societies produce, distribute, and consume goods and services. It examines economic systems, market behaviour, resource allocation, and factors influencing wealth and poverty.

3) **Political Science** is the study of systems of governance, political activity, political thoughts, and political behaviour. It analyses power structures, international relations, public policy, and the functioning of governments.

4) **Sociology** is the study of society, social behaviour, patterns of social relationships, social interaction, and culture. It examines groups of people, social structures, and the way individuals relate to each other within a society.

5) **Psychology** is the scientific study of the mind and behaviour. While sometimes considered a separate field or bridging social and natural sciences, social psychology specifically examines how individuals' thoughts, feelings, and behaviours are influenced by the actual, imagined, or implied presence of others.

6) **Geography** Focuses on the spatial organization of landforms, climate, human activity and the relationship between people, places, and environments. It explores population distribution, cultural landscapes, physical landscapess and the impact of human activities on the planet.

7) **History** is the study of past events, providing context and understanding for present societal conditions. Historians analyse sources to reconstruct and interpret human experiences over time.

8) **Linguistics** is the scientific study of language, including its structure, meaning, and use in different contexts. It explores how people communicate and create meaning through language.

9) **Demography** is the statistical study of human populations, including their size, structure, distribution, and changes over time (births, deaths, migration, aging).

10) **Development Studies** Investigates global, national, and local processes of change, focusing on social, economic, political, cultural, environmental, and technological aspects, often in contexts characterized by poverty and inequality.

11) **Social Work** is an applied social science that focuses on social change, problem-solving in human relationships, and the empowerment and liberation of people to enhance social justice.

12) **Law** (Socio-Legal Studies) Explores the social, political, and economic influences on law and the legal system, and how law shapes society.

1.2.2 Importance of Social Science

Social science plays a crucial role in understanding and addressing the complex challenges facing humanity. Its importance stems from several key contributions:

- **Understanding Human Behaviour and Society**: It provides deep insights into why people behave the way they do, how societies operate, and the factors that influence individual and collective actions. Social Science helps individuals understand social structures, cultural diversity, and human behaviour. This understanding promotes empathy and tolerance toward others, reducing prejudice and discrimination. It also encourages respect for cultural heritage and traditions, fostering unity in diversity.
- **Informing Public Policy and Governance**: Social science research provides vital information for governments, policymakers, and organizations to develop effective and equitable solutions for social issues like poverty, inequality, crime, health, and education.
- **Promoting Critical Thinking and Analysis**: Social Science enhances critical thinking by encouraging learners to ask questions, analyse evidence, and develop reasoned arguments. It helps in understanding different perspectives, evaluating social issues, and finding solutions to complex problems such as poverty, inequality, and conflict. This critical approach is essential for decision-making in both personal and public life.
- **Fostering Cultural Understanding and Global Awareness**: By exploring diverse cultures, histories, and social systems, social science promotes empathy, respect for different viewpoints, and a better understanding of global issues like migration,

climate change, and human rights. Social Science education inculcates a sense of national pride while promoting global citizenship. By learning about the history and culture of one's nation and others, students develop an appreciation for global interdependence and international cooperation.

- **Addressing Real-World Challenges**: Social scientists actively research pressing contemporary issues, such as urbanization, climate change, unemployment, and public health crises, contributing to the development of practical solutions.
- **Driving Economic Progress**: Fields like economics analyse resource management and policy creation, contributing to sustainable economic growth and fair resource distribution.
- **Strengthening Democracy and Justice**: Social sciences promote civic responsibilities, the rule of law, and legal systems, contributing to fairness and equality in society. By studying government, law, and politics, individuals understand their rights and duties. It encourages active participation in democratic processes, such as voting and public debate. Through civic education, Social Science fosters values like justice, equality, and freedom, which are essential for the functioning of a healthy democracy.
- **Preparing Future Leaders**: The knowledge and analytical skills gained through social science education equip individuals to lead and create positive change in various sectors.

1.2.3 Social Science in Class 6

The Class 6 Social Science textbook, 'Exploring Society India and Beyond' was published by NCERT. It offers a foundational and integrated approach to social studies, moving away from a compartmentalized study of history, geography, civics and economics. Its content is structured around five major themes, designed to provide young learners with a holistic understanding of their world, India's place within it, and the complexities of human society. Content of this textbook is broadly divided into themes that encompass the core disciplines of social science. These are:

- **Theme A: India and the World: Land and the People (Geography):** This section introduces fundamental geographical concepts such as locating places on Earth, understanding oceans and continents, and recognizing different landforms and their impact on life. It provides a global perspective while specifically highlighting India's unique geographical identity, emphasizing how its diverse physical features

have shaped its history and culture. Theme B: Tapestry of the Past (History): This theme delves into the study of history, teaching students about timelines, sources of historical information (like archaeological finds), and the early beginnings of Indian civilization, including the Indus-Sarasvati Civilization. It aims to connect the past with the present, helping students understand their cultural roots and the evolution of society.

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- **Theme C: Our Cultural Heritage and Knowledge Traditions (History/Culture):** This part focuses on India's rich and ancient cultural heritage, exploring its guiding principles, manifestations in history, and relevance to contemporary issues. It promotes an appreciation for India's diverse traditions, languages, and knowledge systems.
- **Theme D: Governance and Democracy (Political Science/Civics):** This crucial theme introduces students to the functioning of political systems, particularly India's democratic structure. It covers concepts like grassroots democracy, the roles of different levels of government (central, state, local), the three organs of government (legislature, executive, judiciary), and the rights and responsibilities of citizens. It also briefly touches upon different governmental systems globally and international relations.
- **Theme E: Economic Life Around Us (Economics):** This section provides an elementary understanding of economic activities. It differentiates between economic and non-economic activities, explains how various activities are grouped into primary, secondary, and tertiary sectors, and highlights the interdependence among these sectors. It aims to lay the groundwork for understanding how economies function and resource management.

The importance of this social science content for Class 6 students is manifold. Firstly, it moves beyond rote learning by focusing on "big ideas" and encouraging students to explore, discover, think, and ask questions. This approach is aligned with the National Curriculum Framework for School Education (NCF-SE) 2023, which emphasizes

critical thinking, analytical, descriptive, and narrative capabilities. Secondly, by integrating different social science disciplines within single themes, the textbook fosters a multidisciplinary perspective, bringing learning closer to real-life complexities. For instance, understanding a region involves not just its geography but also its history, culture, and economic activities. Moreover, the textbook aims to develop informed and responsible citizens. By teaching about governance and democracy, it equips students with knowledge about their political system and encourages participation. By exploring India's cultural heritage and unity in diversity, it inculcates a sense of national identity, cultural appreciation, and empathy. The economics chapters provide a basic understanding of how societies sustain themselves, fostering an early awareness of economic principles. The inclusion of engaging visuals, exercises, and projects further enhances student engagement and facilitates a deeper, more meaningful learning experience, making social science not just a subject but a tool for understanding themselves, their country, and the world around them.

1.3.0 Information and Communication Technology

ICT is made up of information and communication technology. Information technology (IT) is the study or application of electronic devices, particularly computers for storing, analysing and transmitting information. It is concerned with the application of computer and its software to convert, store, safeguard, process, transmit and recover information. information Technology (IT) is made up of the knowledge, skill and awareness required to utilize information and communication technologies properly, safely and beneficially in learning, work and daily life. Communication is the act of sending, receiving and exchange is enabled by a chain of connected local networks spreading and linking to other networks internationally. Multimedia information can be transmitted and exchanged taking high quality real-time interaction. ICT stand for information and communication technologies are defined, as a “diverse set of technological tools and resources used to communicate, and to create, disseminate, store and manage information”. These technologies include computers, computer works stations, display facilities, hardware, software recording and processing system for sound, still and moving pictures, graphical calculator, the internet, broad casting technologies (Radio and Television) and other wide range of communication facilities.

ICT is a scientific, technological and engineering discipline and management technique used in handling information, its application and association with social, economic and

cultural matters. (UNESCO, 2002**)** ICT in education refers to the use of digital tools and resources that facilitate teaching and learning and support the educational process. **(**Siraj-Blatchford, 2003**)** ICT in education refers to the use of digital tools and resources to support teaching and learning. These include computers, digital cameras, interactive whiteboards, and the internet. **(**Kent & Facer, 2004**)**

1.3.1 Importance of ICT in School Education

Information and Communication Technology (ICT) has become a part of contemporary education, revolutionizing the conventional methods of teaching and learning. The use of ICT in schools is not just about the adoption of new tools but about redefining the education system to suit the needs of the 21st century.

1. Improving Teaching and Learning Processes: ICT tools like multimedia presentations, educational software, and interactive whiteboards enhance learning. They support diverse learning styles by enabling students to understand complex ideas through visual and auditory channels. Adaptive learning technologies enable students to learn at their own learning pace. Tools like Edmodo adapt content according to individual performance, filling targeted learning gaps with ease.

2. Enabling Access to Information: ICT offers access to a wide range of online materials, such as e-books, scholarly journals, and educational videos. Such an abundance of information aids research and expands the knowledge base of students. Students are able to pursue their studies irrespective of geographical locations through online courses and virtual classrooms, thereby maintaining continuity in learning in the event of unexpected situations such as pandemics.

3. Enhancing Communication and Collaboration: ICT allows for improved communication between teachers and students via emails, discussion forums, and instant messaging, supporting an environment of mutual learning. Projects can be done collaboratively using cloud-based tools, supporting teamwork and interpersonal skills necessary in the workplace in the future.

4. Simplifying Administrative Processes: Administrative processes such as attendance recording, grading, and report preparation are automated using school

management software, freeing educators to spend more time teaching. ICT protects the safe storage and handling of student records and ensures sensitive data is not accessible by unauthorized users.

5. Fostering Inclusive Learning: ICT applications can be adapted to suit students with special needs, offering alternative ways of learning and provision of materials to provide equitable access to education. By offering access to good quality learning materials, ICT closes the urban-rural divide in education, facilitating fairness in learning outcomes.

6. Enabling Students for the Future: Integrating ICT in education enables students to develop vital digital competencies that enable them to navigate the technological needs of the contemporary workplace. ICT supports a culture of ongoing learning, allowing learners to seek learning beyond the classroom with online materials and courses.

7. Improving Assessment and Evaluation: Computer assessment instruments offer feedback immediately, allowing learners to realize what they need to improve upon and permitting educators to make appropriate changes to their teaching. ICT enables several formats of assessment, such as quizzes, simulations, and project-based assessments, to suit multiple learning styles and abilities.

8. Fostering Creativity and Innovation: ICT applications such as multimedia software and digital storytelling websites inspire students to present their ideas in new and unique ways, promoting innovation. Using technology forces students to be analytical and problem-solve, helping them deal with complicated real-life scenarios.

9. Facilitating Teacher Professional Development: ICT offers teachers online training courses, webinars, and educational forums, enabling ongoing professional development.Teachers can interact with colleagues from all over the world, exchanging best practices and resources, improving teaching methods and classroom management techniques.

10. Environmental Sustainability: Online assignments and materials reduce paper usage, ensuring environmental conservation efforts in schools. Modern ICT devices are also energy-efficient, minimizing the carbon footprint of schools and encouraging

environmentally friendly practices. The implementation of ICT in school education provides a myriad of advantages, ranging from improving the teaching and learning processes to empowering students to confront future challenges. By adopting technology, schools can establish more inclusive, efficient, and dynamic learning environments that are responsive to diverse student needs as well as to society in general.

1.3.2 Need and importance of ICT in Social Science

In today's educational environment, Information and Communication Technology (ICT) has emerged as a vital tool, particularly in the context of Social Science education. The use of ICT in teaching and learning activities not only enhances the learning experience but also equips students to live and participate in a more digital and globalized world.

1. Revolutionizing Traditional Pedagogies: Passive reception was the norm with traditional Social Science education, where lectures and readings from textbooks dominated. ICT applications like interactive simulations, digital stories, and virtual field trips have, however, changed this practice. These technologies allow students to actively participate in learning about historical events, cultural practices, and geographical phenomena, leading to increased understanding and recall of knowledge. ICT promotes a transition from memorization to inquiry-based learning. Learners can use online databases, digital archives, and multimedia resources to research areas of interest, develop questions, and carry out research, hence cultivating critical thinking and analytical abilities needed for Social Science inquiry.

2. Improving Accessibility and Inclusivity: ICT tools dismantle geographical boundaries, enabling students from remote or disadvantaged regions to access quality learning resources. Digital libraries and online platforms offer equal learning opportunities, making it possible for all students, irrespective of their location or socioeconomic background, to enjoy enriched Social Science education. The flexibility of ICT enables teachers to customize content in order to suit different learning needs and styles. For example, visual learners are able to take advantage of infographics and videos, while those who are auditory can use podcasts and audio files. This

personalization creates a diverse learning environment where all the students are able to excel.

3. Facilitating Collaborative Learning and Communication: ICT enables collaboration among students using such tools as discussion boards, shared documents, and virtual classrooms. These enable students to collaborate on assignments, exchange viewpoints, and give feedback, enhancing their communication and team working capabilities. By means of ICT, students can interact with fellow learners and professionals from across the globe, having cross-cultural communication and international discourse. This widens their horizons towards understanding international concerns, facilitates cultural tolerance, and gets them ready to take on an active citizenship role in an increasingly globalized world.

4. Enhancing Critical Thinking and Digital Competencies: The sheer volume of information online requires the cultivation of critical thinking and digital literacy. ICT integration in Social Science education educates learners to evaluate the credibility of sources, identify biases, and integrate information from various points of view, preparing them to make informed choices. Teachers can utilize ICT to educate pupils on how to recognize and debunk misinformation, a skill that becomes more valuable in the age of the internet. Through case studies and fact-checking activities, pupils learn to engage information critically and responsibly.

5. Facilitating Professional Development Of teachers: ICT equips teachers with abundant resources such as lesson curriculum creation, and network for sharing expertise. These groups of practice reinforce ongoing learning as well as enhancing the proper inclusion of ICT into Social Science plans, interactive resources, and courses on professional development. These materials help teachers remain updated on teaching practices, embrace innovative pedagogy, and strengthen their classroom practice. Online sites facilitate teachers to access peers, collaborate on learning.

6. Alignment to Educational Policies and Frameworks: The use of ICT in Social Science education supports national education policies focusing on digital literacy and 21st-century skills. The incorporation of technology in the curriculum helps schools to contribute to larger educational goals and prepare students for upcoming challenges. ICT facilitates the integration of up-to-date current events and real-world issues into

the curriculum, enhancing Social Science education as more relevant and interesting. Students are able to examine contemporary social phenomena, and this promotes a closer link between academic content and social contexts.

7. Meeting Challenges and Facilitating Effective Implementation: Successful ICT integration demands proper infrastructure, such as stable internet connection and newer hardware. Infrastructure investment is critical to provide all students and teachers with access to technological innovation. Regular training is necessary for teachers to incorporate ICT meaningfully into the curriculum. Professional development training must address technical as well as pedagogical methods to realize the full potential of ICT to advance Social Science education.

8. Preparing Students for the Future: ICT encourages independent learning by offering students the tools to access and explore material in their own time. This independence develops a culture of lifelong learning that is central to a constantly changing global economy.ICT proficiency is key to success in today's workforce. Through the integration of technology into Social Science studies, schools provide students with the digital skills needed for diverse careers and civic life. The incorporation of ICT in Social Science education is not an add-on but a requirement in gearing students for the intricacies of the contemporary world. Through its ability to reshape pedagogical practices, ensuring inclusivity, encouraging collaboration, and enhancing critical skills, ICT is a catalyst for academic excellence and social development.

1.3.3 ICT Initiatives by Government of India

The Government of India has initiated a large number of ICT (Information and Communication Technology) initiatives in its vision to digitally empower the society and create a knowledge-based economy.

- The **Digital India Mission** was initiated in 2015. It is the flagship initiative of creating a digitally empowered society and a knowledge-based economy by bridging the digital divide between urban and rural spaces. Its core mission is to provide digital infrastructure as a utility to every citizen, offer governance and services on demand, and digitally empower every Indian. The goals are to ensure

high-speed internet access in all Gram Panchayats, encourage digital literacy, provide digital identity through Aadhaar, and make government departments and services electronically integrated. It also aims to establish participative, transparent, and responsive government.

- **National Knowledge Network (NKN)** aims to interconnect all the educational and research institutions in India through a high-speed broadband network to facilitate knowledge collaboration and innovation. Its goal is to allow free flow of ideas and resources between leading institutions such as IITs, IIMs, and universities to facilitate high-end research and education.
- The **National Mission on Education through ICT (NMEICT)** is an initiative of government of India under the Ministry of Education (MoE). It focuses on utilizing ICT to improve the quality of education, enhance access to knowledge, and train students and teachers in digital resources. The mission is to enable equal access to quality educational material throughout the nation. Its main initiatives are SWAYAM (online courses and MOOCs), SWAYAM PRABHA (DTH TV channels for educational programs), ePathshala (for electronic textbooks), Virtual Labs (for practicing experiments virtually), and the National Digital Library of India (NDLI) which has a huge repository of education resources. The role of e-NMEICT is to close the digital divide in education and make no learner left behind due to shortage of resources.
- The Indian government initiated the **PM eVIDYA** programme to provide unbroken learning during covid-19 pandemic. Its aim is to bring all digital learning programmes under one platform and its goals are to provide quality e-content on various platforms such as TV, radio, and online websites. Central components are DIKSHA (digital learning platform with interactive content, training, and textbook-linked QR code), One Class One Channel (special TV channels from Class 1 through Class 12), and radio-based content for far-flung students. The target is inclusive education, particularly among students who do not have adequate access to digital devices.
- **DIKSHA** specifically wants to help the teachers and the students through access to high-quality, curriculum-following content available in different languages. It further acts as the national repository of teacher training. The idea here is to

systematize the teaching process along with ensuring greater quality of it and equally ensuring quality learning for all the students.

- **The UMANG (Unified Mobile Application for New-Age Governance)** program is designed to provide a single platform for citizens to access different government services through smartphones. Its objective is to enhance transparency, minimize paperwork, and improve service delivery in areas such as education, health, agriculture, finance, and others.
- **Common Services Centres (CSCs)** was established under the Digital India initiative. It acts as access points for the delivery of basic public utility services, social welfare programs, and banking services in rural and remote places. They aim to make government services reach the doorstep of citizens and advance digital inclusion at the grassroots.
- **BharatNet Project** was initiated to enhance rural digital connectivity. It aims to connect all 2.5 lakh Gram Panchayats through high-speed Fiber optics/ optical fiber internet. Its mission is to provide last-mile connectivity and enhance digital accessibility in villages for applications such as e-health, e-education, and e-governance.
- **The National Digital Literacy Mission (NDLM)** and **PMGDISHA (Pradhan Mantri Gramin Digital Saksharta Abhiyan)** focus on making one member of each household digitally literate, particularly the rural and underprivileged sections. The mission is to empower the citizens by equipping them with basic digital skills so that they can use a computer and avail internet-based services on their own. The final objective is to bring about digital inclusion and economic empowerment through digital literacy.

These efforts together seek to make India a digitally empowered and inclusive country, enhance delivery of services, ensure transparency, and enable citizens through ICT in every aspect of life such as governance, education, health, and financial services.

1.4.0 Academic Achievement

Dictionary of Psychology by Chaplin (1959) defines educational or Academic Achievement as specified level of attainment or proficiency in academic work as evaluated by the teachers, by standardized tests or by a combination of both. Good (1959) defines Academic Achievement as the knowledge attained or skill developed in the school subjects, usually designated by test scores or marks assigned by the teachers.

Academic achievement refers to the level of success a student attains in educational activities, often measured through grades, test scores, completion of coursework, and overall academic performance. It is a key indicator of a learner's understanding, skill development, and ability to apply knowledge across various subjects.

Historically, the concept of academic achievement has evolved from rudimentary measures tied to basic literacy and religious texts in ancient civilizations to highly standardized and multifaceted assessments in modern schooling systems. Early educational paradigms often focused on memorization and the mastery of specific vocational or philosophical texts, with "achievement" broadly understood as the successful transmission of knowledge across generations, often within apprenticeships or religious institutions. The advent of formal schooling, particularly from the 19th century onwards with the rise of industrialization and mass education, necessitated more standardized methods of evaluation. This led to the development of grading systems, examinations, and curricula, transforming academic achievement into a quantifiable outcome that could be compared across students and institutions. The 20th century further refined these measures with the introduction of standardized tests, IQ assessments, and more sophisticated psychometric tools, attempting to objectively measure learning outcomes and cognitive abilities, pushing the field towards a more data-driven understanding of student progress.

The importance of academic achievement lies in its role as a gateway to higher education, employment opportunities, and personal development. It serves as a benchmark for teachers to assess instructional effectiveness and for policymakers to evaluate educational systems. For students, academic success boosts self-confidence, opens doors to scholarships and careers, and contributes to social mobility. At a broader level, nations rely on the academic performance of their citizens to drive innovation, economic growth, and social well-being. Academic achievement fosters critical thinking, problem-solving, and communication skills that are essential in today's knowledge-based society. In a rapidly changing global context, students who achieve academically are better prepared to face the challenges of the future and contribute meaningfully to society.

1.5.0 Rationale of the Study

In recent years, the educational landscape has transformed with the advent of digital technology. Schools are increasingly adopting ICT to enhance student engagement,

facilitate learning, and improve academic performance. Despite the potential of ICT to revolutionize teaching and learning, its implementation in Social Science classrooms remains inconsistent. Many teachers either lack adequate training or are reluctant to adapt due to systemic challenges. At the same time, students today are digital natives who respond better to visual, interactive, and media-rich content. This discrepancy creates a gap between learners' needs and instructional practices. This study aims to address that gap by empirically evaluating the effect of ICT-based instruction on academic achievement in Social Science. The outcomes are expected to provide evidence-based recommendations for educators.

1.6.0 Statement of the Problem

The statement of the problem is “A study of the effect of ICT on the academic achievement of class 6 students in social science.”

1.7.0 Objective of the Study

1) To assess the pre-test academic achievement levels in Social Science of Class 6 students in both control and experimental groups.

2) To implement ICT-based instructional strategies for the experimental group while teaching Social Science.

3) To compare the post-test academic achievement levels in Social Science between the control group (taught using traditional methods) and the experimental group (taught using ICT tools).

4) To determine the effectiveness of ICT-integrated instruction in enhancing academic achievement in Social Science among Class 6 students.

5) To analyse the difference in academic gains (post-test minus pre-test scores) between the control and experimental groups.

1.8.0 Research Question

1) Is there any significant difference in the pre-test academic achievement scores in Social Science between the control and experimental groups?

2) What is the effect of ICT-based instruction on the academic achievement of Class 6 students in Social Science?

3) Is there any significant difference in post-test academic achievement scores between students taught using traditional methods and those taught using ICT tools?

4) Do the students in the experimental group show greater academic improvement (gain scores) in Social Science compared to the control group?

1.9.0 Hypothesis

The hypothesis will be tested at 0.05

- H_0 1: There is no significant difference in the mean score of pre-test academic achievement scores in Social Science between the control (taught with traditional method) and experimental group (taught with ICT).
- H_0 2: There is no significant difference between the mean score of academic achievement in social science of pre-test control group and post-test control group (taught with traditional method).
- H_0 3: There is no significant difference between the mean score of academic achievement in social science of pre-test and post-test experimental group (taught with ICT).
- H_0 4: There is no significant difference in the mean score of post-test academic achievement scores in Social Science between the control (taught with traditional method) and experimental groups (taught with ICT).
- H_0 5: There is no significant improvement in academic achievement (gain scores) of Class 6 students taught using ICT-based methods compared to those taught using traditional methods.

1.10.0 Delimitation of the Study

This study is delimited to Class 6 students studying Social Science in DMS Bhopal (CBSE-affiliated) in Bhopal district of Madhya Pradesh. The sample size is limited i.e. 49, and the duration of the intervention was short i.e. 1 week. The study is restricted to measuring academic achievement through an achievement test and does not evaluate other aspects such as attitude or retention of learning.

CHAPTER 2
REVIEW OF RELATED LITERATURE

2.1.0 Introduction

A literature review is a critical examination of previous research related to the present study. It provides a theoretical framework, identifies research gaps, and strengthens the rationale for the current investigation. This chapter presents a review of literature on the impact of ICT on education, particularly in the context of Social Science teaching and learning at the school level.

2.2.0 Studies Related to ICT

Azidah Abu Ziden, Issham Ismail, Robitah Spian and K. Kumutha (2011) carried study on 'The Effects of ICT Use in Teaching and Learning on Students' Achievement in Science Subject in a Primary School in Malaysia'. This study aimed to identify the relationship between the Information and Communication Technology (ICT) use in teaching and learning towards the achievement of primary school students in Science subject. 100 respondents were selected at a primary school in Butterworth, Penang, Malaysia. This study employed Quantitative approach. Students were classified into two groups, Treatment Group (teaching using ICT) and Control Group (teaching without using ICT). The t-test showed higher value for the Treatment Group as compared to the Control Group. The result indicated that ICT use in teaching and learning increased the students' achievement in Science subject in the primary school. This study also attempted to determine the differences of achievement between the female and male students in Science subject. Both male and female students showed improvement in their learning outcomes. However, the male students revealed higher level of achievement compared to the female students. The findings showed positive relationship between ICT use in science lessons and the students' achievements.

Igori Wallace et. al (2019) examined the effect of Information and Communications Technology on students' academic performance in science education in College of Education, Oju, Benue State, Nigeria. The study was a quasi-experimental design consisting of pre-tests and post-tests with a control group using intact classes. Two research questions were raised to be tested alongside two hypotheses at a 0.05 level of significance. The population of the study constituted 3,450 NCE II students from faculty of science, College of Education Oju. The sample comprised 53 NCE II students

chosen from the faculty through the intact class. The instrument of data collection was the Chemistry Achievement Test (CAT), whereas the data were analysed using means and standard deviations in relation to research questions and the t-test for hypotheses. The results showed that students who were taught with ICT had better academic performance on Chemistry and that the gender has no significant effect in the academic performance of students who were taught Chemistry with ICT instructional package.

Sonali Gour (2023) conducted the study to investigate the effect of ICT integrated teaching on academic achievement in science for class seventh student in Bhopal. She concluded that ICT integrated teaching yielded significant improvement in academics. She also mentioned that ICT enhanced the engagement of students in classroom and generated interest among students regarding science subject.

Wael Sh. Basri, Jehan A. Alandejani and Feras M. Almadani (2018) carried study on 'ICT Adoption Impact on Students' Academic Performance: Evidence from Saudi Universities'. This study investigates the adoption of ICT by the Saudi universities (King Abdulaziz University (KAU), Damam University (DU), Northern Border University (NBU) and Baha University (BAU)) and explores impact of ICT on students' academic performance. This study also examines the moderator effect of gender and student majors on the relationship between ICT and academic achievement. This study adopted quantitative research approach and a sample size of 1000 students. The Analysis of Moment Structures (AMOS) was used as research tool for structural equation modelling and path analysis. The findings reveal that there exists a relationship between ICT adoption and academic performance in a conservative environment. An additional finding also stated that ICT adoption resulted in the improvement of the performance of female students more than the male. students' IT major was found to be making no impact on students' academic achievement.

Ronald Osei Mensah, Charles Quansah, Bernice Oteng and Joshua Nii Akai Nettey (2023) conducted study on 'Assessing the effect of information and communication technology usage on high school student's academic performance in a developing country'. This study employed a mix method approach to access the effect of ICT usage on SCSs student academic performance and its associated challenges in Ghana. The respondents of this study were chosen using the Yamane formula. A total of 172 respondents were chosen for this study. Questionnaire and Interview Guide were the data collection tools used in this study. It was found that the majority of students

use their phones, computers, internet/modem, social media, digital cameras, or printers outside of school. On one hand, the findings stated that ICT use has helped students to enhance their academic performance. On the other hand, the findings also revealed that some challenges confront students using ICT facilities in their learning processes for lack of internet connection and the attitude of some teachers in integrating ICT into class. The availability of ICT resources in SCSs and sometimes even at home is crucial for the success of ICT in SCS education. Then the study suggests that parents should be encouraged to provide ICT resources for their children. Furthermore, governments in developing countries should set aside sufficient funds for providing universal access to ICT for the unserved and underprivileged groups.

2.3.0 Studies Related to ICT in Social Science

Gyeltshen and Rebecca (2021) carried research on 'Enhancing 6th Grade Students' Learning in Social Studies through Technology Based Teaching Approach'. This study carried on 49 students of two classes of 6th grade students: control group (n=25) and experimental group (n=24) in one of the middle schools in Bhutan. The research instruments consisted of experimental group treatment, survey questionnaire and semi-structured interview questions. The result suggested that there is an affirmative effect of technology-based teaching approaches on the 6th grade students' social studies learning achievement test. It was found that mean test scores of the experimental group were higher than the control group on pre-test and post-test analysis. Further, the findings from the study established that students had a positive perception of learning through technology-based instructions, as learners enjoyed, and were better able to understand, what has been taught. The findings from the study concluded that teaching through technology-based approaches enhanced students' learning in the classroom. It also recommended that teachers should apply technology-based instructions as a tool to maximize student learning. In addition, building of smart classrooms through digitalization could support students with learning difficulties in different subjects.

Dr. Fareo Dorcas oluremi conducted research in selected tertiary institutions in Adamawa state, Nigeria on 'influence of information and communication technology (ICT) on teaching and learning geography in selected tertiary institutions in Adamawa state'. The study revealed that teachers were moderately exposed to new technologies in teaching geography and poor availability of new technologies in teaching and learning of geography. The study found that there is poor integration of new

technologies in teaching geography by geography teachers. This study recommended that Government should concentrate the ICT policies in the secondary schools in the State and there should be continuous training and ICT skills upgrading for teachers.

Cosmas Chirwa and Kaiko Mubita conducted the study, 'the use of ICT in teaching of geography in selected schools of Petauke district in eastern province of Zambia' in Zambia. A qualitative approach with a descriptive study design was used to collect data through in-depth interviews and observations. A total of twenty-eight (28) respondents were involved in the study and the information collected was thematically analysed with the guidance of Braun and Clarkeâ€™s (2006) six phase framework. The study revealed that there is very minimal integration of ICT in the teaching and learning of geography. There were a number of barriers noted leading to the failure of effective integration of ICT in geography. This study recommended that school management should provide adequate funding to enable its teachers to attend workshops where they can gain skills and knowledge for integrating ICTs in the teaching and learning of Geography.

Srivastava and Sangeeta Naveen (2013) carried out study on 'effect of ICT information and communication technology tools on the academic improvement of secondary school students' in 2013. The study revealed that the intervention in form of ICT tool-based teaching programme did enhance the achievement level of students of the experimental group in geography.

Emin Cener, Ismail Acun & Gokhan Demirhan (2015) conducted study to investigate the effect on pupils' achievement in social studies resulting from teaching social studies with the help of ICT. A theme concerning history, geography and culture taken from the social studies syllabus was selected for the research, Turks on the Silk Road. Social studies were taught to sixth graders with the aid of multimedia CDs, documentaries, computers, and PowerPoint. The research design of the study was a Quasi-experimental design. Three different research tools were used to collect data: an academic achievement test, an attitude measurement scale on social studies education, and an attitude measurement scale on ICT. The following were found when post-test achievement scores were treated as dependent variables in block wise regression analysis: Pupils' attitudes towards the subject and ICT do not have an effect on their post-test achievement scores. However, both prior knowledge on the subject and the treatment, that is, teaching social studies with ICT, have a positive effect on their

achievement. No significant effect was found between teaching social studies with ICT and pupils' attitudes toward social studies lessons. This study recommended that teachers and policy makers should find ways to formulate effective ICT integration applications for social studies.

Ekong Xavier Moses (2024) carried study on 'A Critical Analysis of the Usage of ICT Tools on Social Studies and Students" Academic Performance in Public Secondary Schools in Uyo Local Government Area of Akwa Ibom State'. This study examined the relationship between usage of ICT tools on social studies and students' academic performance in public secondary schools in Uyo Local Government Area, Akwa Ibom State. The population of the study comprised all the 5,029 junior secondary three (JSS3) students in the study area. A sample of 200 students were selected from total population. Simple random sampling technique was used to select 5 public schools from the total population of 14 public schools. Pearson product moment correlation (PPMC) was used in testing the hypotheses at 0.05 significant level an at 198 degree of freedom. The findings of the study revealed and concluded that the application of ICT tools for accessing information has little or no effect on social studies and students 'academic performance. The study recommended that the Akwa Ibom State Ministry of Education in collaboration with the State Secondary Education Board should provide or supply ICT facilities and organize in-service training to teachers on the application of ICT tools, so as to enhance quality and competence in teaching.

CHAPTER 3
RESEARCH METHODOLOGY

3.1.0 Introduction

This chapter presents the methodology adopted for conducting the dissertation. It includes the research design, population and sample, tools and techniques used, procedures for data collection, and methods of statistical analysis.

3.2.0 Research Design

This dissertation utilized a quasi-experimental design with pre-test and post-test control group method. This was adopted to examine the impact of ICT-integrated instruction on the academic performance of Class 6 students in Social Science.

This study comprised two groups:

- **Control Group**: Underwent conventional instruction (chalk and talk approach).
- **Experimental Group**: Underwent ICT-integrated instruction through multimedia presentation, educational videos, animations, and interactive quizzes.

Two groups were given a pre-test to measure baseline performance in academics, then an intervention, and later a post-test to gauge learning gains.

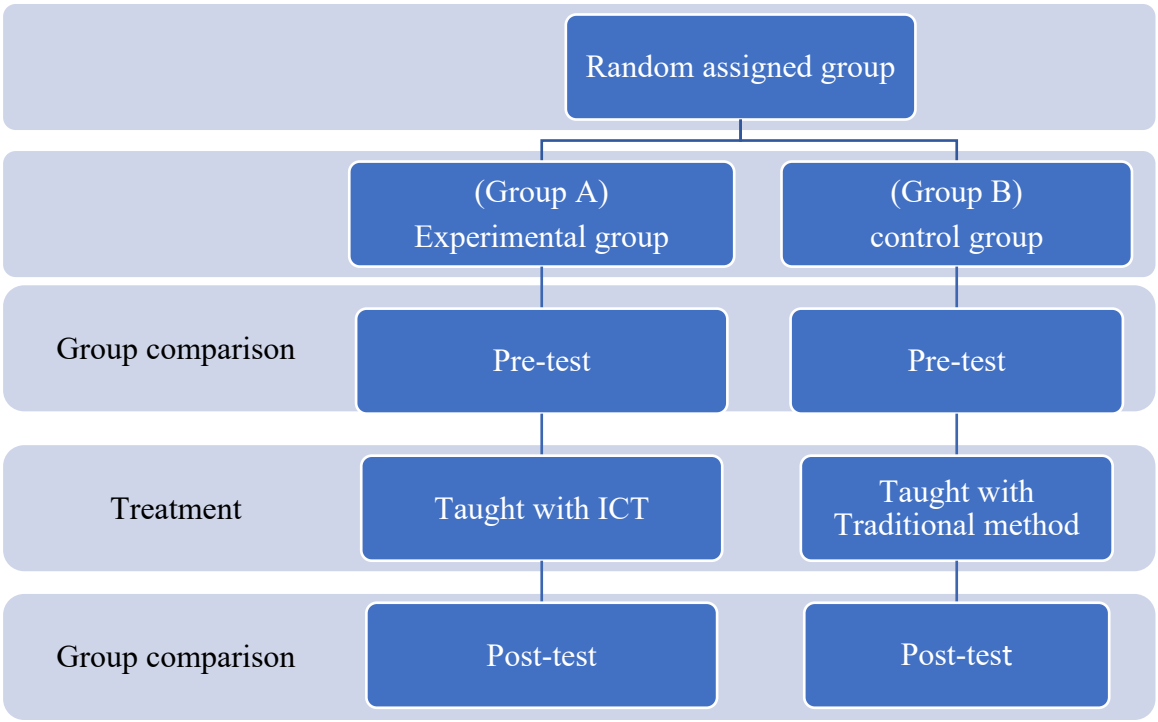

Fig 3.1: Research design

3.3.0 Variables of the Study

In this study Independent Variable is ICT-based instructional strategy and the Dependent Variable is Academic achievement in Social Science. Whereas Control Variables are Duration of teaching, content taught, grade level, and assessment tool used in this study.

3.4.0 Population and Sample

Target population for this study included all Class 6 students studying in CBSE-affiliated schools in India.

Two intact sections of class 6 students from Demonstration Multipurpose School (DMS) Bhopal were selected using convenience sampling to form the control and experimental groups.

3.5.0 Procedure of the Study

The quasi-experimental procedure was adopted on class 6th students of DMS Bhopal. 2 existing section of class 6 were selected and section A students received ICT mediated teaching and section B students received traditional\conventional teaching (Chalk and Talk method) for the same selected topics in social science.

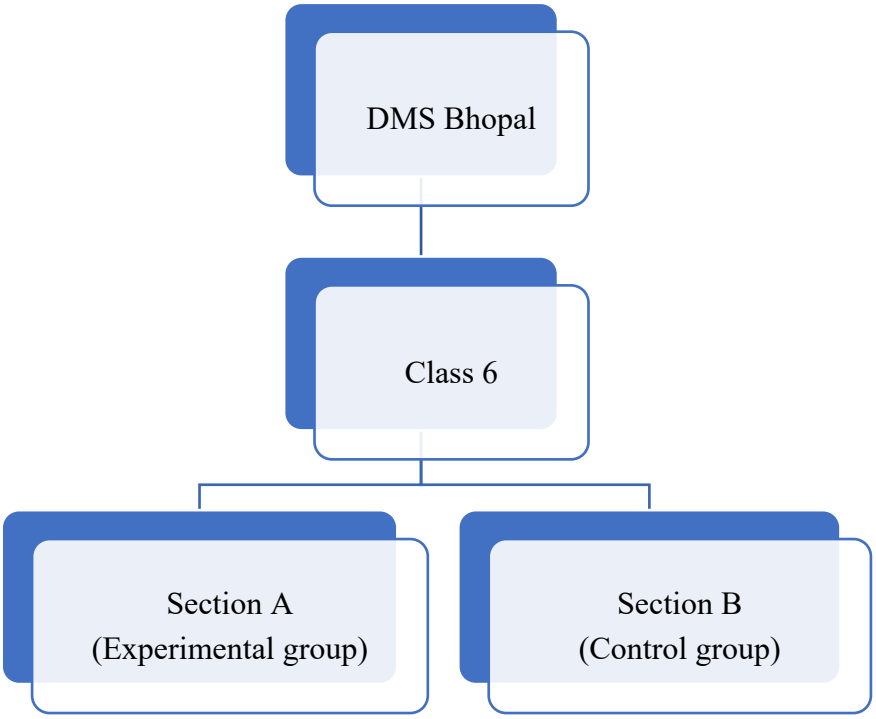

Fig 3.2: procedure of group selection

3.5.1 Pre-Test Administration

A common pre-test was administered to both groups to assess baseline knowledge in Social Science.

3.5.2 Treatment/Intervention Phase (1 week)

- Control Group: Taught using traditional lecture-based methods.
- Experimental Group: Taught using ICT tools including smart board presentations, simulations, educational videos, and interactive discussions.

3.5.3 Post-Test Administration

After the completion of the instructional period, a post-test (same as the pre-test with changes in order of questions) was conducted for both groups to assess academic achievement. Individual scores from pre-test and post-test were recorded for each student

Group '	Pre-test	Treatment	Post-test
Experimental group	O_1	X_E	O_2
Control group	O_3	X_C	O_4

Table 3.1: pre-test post-test control group design

- **O_1 and O_3** are academic achievement of students of experimental and control group respectively before the treatment or intervention phase.
- **O_2 and O_4** are academic achievement of students of experimental and control group respectively after the treatment or intervention phase.
- **X_E** is the treatment given to experimental group i.e. taught with ICT mediated instruction.
- **X_C** is the treatment given to control group i.e. taught with traditional/conventional/ chalk and talk method.

3.6.0 Tools of the Study

Researcher developed the 2 set of tools i.e. instructional tool and achievement test.

3.6.1 Instructional tool/ lesson plan

Researcher developed ICT-integrated lesson plan for experimental group, following a constructivist approach with multimedia content and interactive learning activities. Researcher utilized Google Earth, Quizlet, animated Youtube videos, time zone map, timeanddate.com etc. in classroom of experimental group. Researcher also developed lesson plan for Control group using traditional/ conventional approach of teaching.

3.6.2 Measuring tool/ achievement test

Researcher developed the achievement test for pre-test and post-test with slight varying difficulty level. Researcher prepared achievement test from selected chapter of the Class 6 NCERT textbook **'Exploring Society: India and Beyond'** i.e. locating places on the earth. The test consisted of multiple-choice questions (MCQs), true and false, match the following, fill in the blanks and short answer questions.

3.7.0 Statistical Techniques Adopted in the Study

- **Independent Samples t-test** is used for the testing of H_{01} H_{04} and H_{05} i.e. for comparing the pre-test scores of Experimental and Control groups, post-test scores of Experimental and Control groups and gain scores of Experimental and Control groups respectively.
- **Paired Samples t-test** is used for testing of H_{02} and H_{03} i.e. for comparing the pre-test and post-test scores of Control and Experimental group respectively.

Hypotheses were tested at 0.05 level of significance. These statistical tools were used to test the null hypotheses and examine the effectiveness of ICT on academic achievement.

3.8.0 Ethical Considerations

Consent was obtained from school authorities and participants.

The anonymity and confidentiality of students were maintained.

No group was deprived of learning opportunities.

CHAPTER 4
DATA ANALYSIS AND INTERPRETATION

4.1.0 Introduction

This chapter provides a comprehensive analysis and interpretation of the data collected in order to assess the impact of ICT on the academic achievement of Class 6 students in Social Science. The analysis involves two groups of students which were the experimental group that experienced ICT integration and the control group that received traditional instruction. Pre-test and post-test measures were used for the experimental group and control group to assess achievement test scores.

4.2.0 Data Summary

Table 4.1: Data summary of control and experimental group (pre-test and post-test)

Group	Test type	N	Mean	Standard deviation
Control group	Pre-test	19	18.31	5.67
Control group	Post-test	19	21.74	5.13
Experimental group	Pre-test	21	18.28	5.65
Experimental group	Post-test	21	23.24	5.36

4.3.0 Hypothesis Testing and Interpretation

1) H_0 1: There is no significant difference in the mean score of pre-test academic achievement scores in Social Science between the control (taught with traditional method) and experimental group (taught with ICT).

Table 4.2: independent sample t-test for experimental and control group (pre-test)

Group	N	$\bar{X}$	SD	Df	P	t-cl	t-cr	Interpretation	decision
experimental	21	18.28	5.65	38	0.49	0.16	2.02	Not significant	Accept H_{01}
Control	19	18.31	5.67						

Here, N= Total item, $\bar{X}$= Mean, SD= Standard deviation, t-cl= t-calculated, t-cr= t-critical, Df= degree of freedom

Interpretation: our calculated value (0.16) is less than table value (2.02) at 0.05 significance level. Therefore, there is no statistically significant difference in the initial academic achievement of the two groups i.e. control (taught with traditional method) and experimental group (taught with ICT). This indicates that they were comparable at the beginning of the study.

2) H_0 2: There is no significant difference between the mean score of academic achievement in social science of pre-test control group and post-test control group (taught with traditional method).

Table 4.3: paired sample t-test for control group (pre-test and post-test)

Test	N	Mean	SD	Df	P	t-cl	t-cr	Interpretation	Decision
Pre-test	19	18.31	5.67	18	0.00	4.08	2.1	Significant	Reject
Post-test		21.74	5.13						H_{02}

Here, N= Total item, X= Mean, SD= Standard deviation, t-cl= t-calculated, t-cr= t-critical, Df= degree of freedom

Interpretation: our calculated value (4.08) is more than table value (2.1) at 0.05 significance level. And hence, there is statistically significant improvement in academic achievement within control group (taught with traditional method) i.e. traditional method is still useful in teaching Social Science for yielding good academic achievement in Social Science.

3) H_0 3: There is no significant difference between the mean score of academic achievement in social science of pre-test and post-test experimental group (taught with ICT).

Table 4.4: paired sample t-test for experimental group (pre-test and post-test)

Test	N	Mean	SD	Df	P	t-cl	t-cr	Interpretation	Decision
Pre-test	21	18.28	5.66	20	0.0	8.43	2.08	Significant	Reject
Posttest		23.24	5.37		0				H_{03}

Here, N= Total item, X= Mean, SD= Standard deviation, t-cl= t-calculated, t-cr= t-critical, Df= degree of freedom

Interpretation: our calculated value (8,43) is much more than table value (2.02) at 0.05 significance level. And hence, there is statistically significant improvement in academic achievement within experimental group (taught with ICT). However experimental group yielded better improvement in academic achievement as their mean score and t-value are higher than the control group. Both traditional method and ICT-integrated approach are good for teaching social science. However ICT-integrated approach is more suitable than traditional method for teaching Social Science.

4) H_0 4: There is no significant difference in the mean score of post-test academic achievement scores in Social Science between the control (taught with traditional method) and experimental groups (taught with ICT).

Table 4.5: independent sample t-test for experimental and control group (post-test)

Group	N	$\bar{X}$	SD	Df	P	t-cl	t-cr	Interpretation	decision
Experimental	21	23.24	5.36	38	0.19	0.88	2.02	Not	Accept
Control	19	21.74	5.13					significant	H_{04}

Here, N= Total item, $\bar{X}$= Mean, SD= Standard deviation, t-cl= t-calculated, t-cr= t-critical, Df= degree of freedom

Interpretation: our calculated value (0.88) is less than table value (2.02) at 0.05 significance level. Therefore, there is no statistically significant difference in the post-intervention phase academic achievement of the two groups i.e. control (taught with traditional method) and experimental group (taught with ICT) at significance level of 0.05.

ICT-mediated teaching didn't yield significant improvement because of no prior exposure to ICT integrated learning of students, lesser time period of ICT intervention i.e. only 1 week and poor class period selection (8^{th} period/last period was used for teaching students with ICT-mediated instruction as it was only available period for using smart classroom). Generally, in last period, interest of students regarding learning things decreases significantly. If ICT-mediated teaching was used in earlier period it may have yielded significant academic achievement in comparison to the traditional (chalk and talk method) teaching.

5) H_0 5: There is no significant improvement in academic achievement (gain scores) of Class 6 students taught using ICT-based methods compared to those taught using traditional methods.

Table 4.6: independent sample t-test for experimental and control group (gain scores)

Group	N	$\bar{X}$	SD	Df	P	t-cl	t-cr	Interpretation	decision
experimental	21	4.95	2.63	38	0.16	1.03	2.02	Not significant	Accept H_{05}
Control	19	3.63	3.59						

Here, N= Total item, $\bar{X}$= Mean, SD= Standard deviation, t-cl= t-calculated, t-cr= t-critical, Df= degree of freedom

Interpretation: our calculated value (1.03) is less than table value (2.02) at 0.05 significance level. Therefore, there is no statistically significance difference between the gain scores of experimental and control group at 0.05 significance level.

However difference in mean score of experimental and control group suggest that experimental group was at leading edge in terms of gain score i.e. academic achievement.

CHAPTER 5

FINDINGS, CONCLUSION AND SUGGESTIONS

5.1.0 Introduction

This chapter presents the major findings based on data analysis, draws conclusions aligned with the objectives and hypotheses, and provides suggestions for future practice and research. It also highlights the educational implications of the study**.**

5.2.0 Major Research Findings

Based on statistical analysis and interpretation, the following findings were observed:

I. There was no significant difference between the pre-test scores of the control and experimental groups, confirming that both groups were academically equivalent before the intervention.

II. Both group (control and experimental) achieved statistically significant improvement in academic achievement in social science from pre-test to post-test.

III. Although the control group also showed a statistically significant improvement from pre-test to post-test, the gain was much lower than that of the experimental group.

IV. There was no significant difference between the post-test scores of the control and experimental groups. Experimental group failed to yield statistically significant academic achievement in post-test at significance level of 0.05. however experimental group performed better than control group.

V. There was no significant difference between the gain scores of the control and experimental groups at 0.05 significance level..

5.3.0 Educational Implication

5.3.1 for teachers

The present study explored the impact of Information and Communication Technology (ICT) on the academic achievement of Class 6 students in Social Science. While the data analysis revealed no statistically significant difference in achievement between the ICT-integrated group and the traditional instruction group, both groups showed notable improvement from pre-test to post-test. This indicates that, although ICT did not significantly outperform traditional methods in this specific setting, it remains a powerful pedagogical tool when used strategically. The study offers several key implications for classroom teachers, especially those teaching Social Science at the middle school level.

I. Teachers should recognize ICT not as a replacement for traditional instruction but as a complementary resource that can enrich the learning environment. Digital tools can offer visual and interactive representations of historical events, political structures, and geographical features, making abstract concepts more tangible and accessible for young learners.

II. ICT aligns well with constructivist teaching philosophies, which emphasize active learning, exploration, and knowledge construction. Teachers can use technology to promote collaborative projects, inquiry-based learning, and experiential tasks that encourage students to engage deeply with content rather than passively receive information.

III. One of the strongest implications is the necessity of comprehensive teacher training. The effectiveness of ICT in education depends not only on the availability of tools but also on how competently and creatively teachers use them. Professional development should focus on digital pedagogy, lesson planning with ICT, and classroom management in tech-integrated environments.

IV. Teachers must ensure that ICT resources used in the classroom are directly aligned with the prescribed curriculum. Arbitrary use of technology can dilute learning objectives. Carefully selected multimedia content, educational games, and simulations should reinforce specific Social Science concepts as outlined in the Class 6 syllabus.

V. Teachers should blend ICT with traditional activities such as debates, map-making, and textbook exercises to maintain cognitive balance and cater to varied learning preferences. ICT offers new possibilities for assessment through digital quizzes, online polls, interactive assignments, and instant feedback. These tools can help teachers monitor progress in real-time and adapt instruction based on individual student needs.

VI. ICT can play a transformative role in inclusive education. For instance, visual presentations can support students with learning difficulties, and self-paced learning platforms can benefit both advanced and struggling learners. Teachers must be mindful to provide equal access and assistance to students from diverse backgrounds and with varying levels of digital literacy.

VII. Teachers can use ICT to instill values of digital citizenship, information literacy, and ethical technology use.

5.3.2 For learners

The findings of this study highlight important implications for students as the primary beneficiaries of ICT integration in education. Even though the research did not establish a statistically significant advantage of ICT-based instruction over traditional methods in terms of academic achievement, it clearly showed that both methods led to significant

learning gains. This reinforces the idea that ICT, when used thoughtfully, has the potential to enhance students' learning experiences, skills, and engagement levels, particularly in Social Science at the middle school level.

I. One of the most direct implications of ICT integration for learners is increased engagement. Digital tools such as animations, interactive maps, videos, and quizzes make Social Science topics livelier and more relatable. This can help reduce monotony and increase attention spans among Class 6 students, who often find conventional textbook learning less stimulating.

II. ICT tools offer students opportunities to learn at their own pace. Platforms that allow students to pause, repeat, or explore content outside of classroom hours support autonomous learning habits. This is particularly useful in Social Science, where students may need time to process complex historical or geographical concepts.

III. Regular exposure to ICT in the classroom naturally fosters digital literacy—a key 21st-century skill. Learners begin to develop competence in navigating educational software, interpreting online content, and using technology for research and presentations, which are essential for higher education and future employment.

IV. ICT enables experiential learning by simulating real-world scenarios and facilitating role-plays, virtual tours, and decision-making games. These experiences deepen students' understanding by placing them in realistic, context-based situations, which is especially effective in subjects like history, civics, and geography.

V. Learners benefit greatly from instant feedback provided by many ICT platforms. This helps them identify mistakes, correct misconceptions, and feel a sense of accomplishment through gamified elements such as badges or progress bars. Such features motivate students to improve continuously.

VI. Many ICT tools promote collaborative learning, where students work together on projects, online forums, or presentations. This cultivates important interpersonal skills like communication, teamwork, and peer learning, which are valuable beyond academics.

VII. Interactive ICT modules that include problem-solving tasks, simulations, and analytical questions help learners build critical thinking skills. This is particularly

important in Social Science education, where students must analyze events, understand cause-effect relationships, and evaluate social systems.

VIII. ICT can help bridge learning gaps by providing equal access to quality resources. Learners from underprivileged backgrounds or remote areas can access multimedia content and interactive lessons, thereby reducing disparities in educational opportunities.

5.4.0 Conclusion of the Study

The present study aimed to investigate the effect of Information and Communication Technology (ICT) on the academic achievement of Class 6 students in Social Science. Two groups were studied—an experimental group taught through ICT-integrated instructional strategies and a control group taught through conventional methods. Pre-test and post-test scores were collected and analyzed to determine whether ICT had a significant impact on learning outcomes.

The findings revealed that both instructional approaches led to statistically significant improvements in student performance. However, the comparison between the post-test scores and gain scores of the experimental and control groups indicated no statistically significant difference. This suggests that, within the scope and duration of the study, ICT did not provide a superior advantage over traditional teaching methods in terms of measurable academic achievement.

Despite this, qualitative observations and broader educational literature support the idea that ICT offers several pedagogical benefits, including increased student engagement, flexibility in learning, and opportunities for differentiated instruction. The use of ICT in Social Science may not immediately translate into higher test scores, but it does contribute positively to the development of 21st-century skills such as digital literacy, collaboration, and critical thinking.

Therefore, the study concludes that while ICT may not dramatically outperform traditional methods in short-term academic assessments, it holds strong potential as a transformative educational tool. When implemented thoughtfully and systematically, ICT can enhance both the teaching and learning experience, especially in content-rich subjects like Social Science.

5.5.0 Limitation of the Study

While the present study contributes valuable insights into the role of ICT in enhancing academic achievement in Social Science at the Class 6 level, certain limitations must be acknowledged:

I. The study was conducted with a relatively small group of students from a specific grade and locality. As such, the findings may not be generalizable to all educational settings, schools, or regions.

II. The ICT-based instructional intervention was implemented over a limited time frame. A longer duration might have yielded more pronounced differences in academic performance or other qualitative benefits.

III. The ICT-based instruction was implemented in last period, which may significantly hamper the result of the study.

IV. The study focused solely on Social Science. The effect of ICT may differ across subjects, especially in domains like Science, Mathematics, or Language where interactivity and visualization might play a different role.

V. The research primarily measured academic achievement through test scores. It did not account for other important learning outcomes such as student attitudes, retention, conceptual understanding, or creativity.

VI. Some students may have had prior exposure to technology at home or in school, while some were untouched to technology. potentially influencing their comfort level and learning outcomes during the intervention.

5.6.0 Suggestions for Further Research

To build upon the findings of this study and address its limitations, the following areas are recommended for future research:

I. Future research should consider conducting long-term studies to observe the sustained impact of ICT on learning outcomes and skill development over a full academic year or more.

II. Comparative studies across different subjects can help determine whether ICT has varying degrees of effectiveness depending on the nature of the content being taught.

III. Further research should focus on Including students from different regions, socio-economic backgrounds, and educational systems. That would enhance the generalizability of findings and offer broader perspectives.

IV. In addition to test scores, future studies should include qualitative tools such as interviews, observations, and student feedback to gain deeper insights into learning experiences and attitudes toward ICT.

V. Studies can be designed to test the effectiveness of particular ICT tools (e.g., educational apps, simulations, gamified platforms) to determine which digital resources have the highest impact on specific learning outcomes.

ANNEXURE

ACHIEVEMENT TEST

(pre-test)

Subject: Social Science **class: 6**

Topic: locating places on the earth **total marks:30**

Time: 60 minutes

Section A: Multiple Choice Questions (1 Mark each)

1) What is the imaginary line at 0° latitude called?

a) Prime Meridian b) Equator

c) Tropic of Cancer d) Arctic Circle

2) How many degrees of longitude represent one hour of time difference?

a) 10° b) 15°

c) 20° d) 30°

3) Which tool represents the Earth in a three-dimensional form?

a) Map b) Globe

c) Atlas d) Compass

4) What causes day and night on Earth?

a) Revolution around the Sun b) Rotation on its axis

c) Tilt of the Earth d) Movement of the Moon

5) Which latitude is located at 23.5°S?

a) Equator b) Tropic of Capricorn

c) Arctic Circle d) Antarctic Circle

Section B: Fill in the Blanks (1 Mark each)

6) The imaginary lines running parallel to the Equator are called _____.

7) The Prime Meridian is located at _____ longitude.

8) A map is a _____ representation of the Earth or a part of it.

9) _____ are imaginary lines that measure the distance east or west of the Prime Meridian.

10) The _____ divides the Earth into the Northern and Southern Hemispheres.

section C: True or False (1 mark each)

11) The Tropic of Cancer is located at 66.5°N.

12) Longitudes help in determining the time zones.

13) Maps and globes both show the Earth in three dimensions.

14) Earth's rotation takes approximately 24 hours.

15) The International Date Line is a straight line.

Section D: Short Answer Questions (2 Marks each)

16) Explain the difference between a map and a globe.

17) How is the grid system important for locating places?

18) Explain the difference between longitude and latitude.

19) Why are latitudes are also called parallels?

20) Why do we need symbols and colours in the map?

Section E: Diagram-based question

21) On the provided blank world map:

a) Label the Equator, Prime Meridian, and International Date Line. (2 Marks)

b) Mark and name the Tropic of Cancer and Tropic of Capricorn. (2 Marks)

c) Shade the Northern Hemisphere. (1 Mark)

ACHIEVEMENT TEST

(Post-test)

Subject: social science **class: 6**

Topic: locating places on the earth **total marks:30**

Time: 60 minutes

Section A: Multiple Choice Questions (1 Mark each)

1) Lines of latitude run:
   a) Vertically b) Horizontally
   c) Diagonally d) None of the above

2) Which is the largest latitude

   a) Tropic of cancer b) Equator

   c) Tropic of Capricorn d) North pole

3) The Tropic of Capricorn is located at:
   a) 23.5° North b) 23.5° South
   c) 66.5° North d) 90° South

4) How many degrees of longitude represent four hours of time difference?

   a)50 b) 60

   c)55 d)75

5) which country has the largest no. of time zones?

   a) Russia b) USA

   c) Canada d) UK

Section B: Fill in the Blanks (1 Mark each)

6) Earth rotates from _____ to _____, causing time differences.

7) the international date line is located at _____longitude.

8) A globe is a _____ representation of the Earth.

9) Three important components of maps are _____, _____and _____.

10) _____ is a book or collection of maps.

section C: True or False (1 mark each)

11) While crossing the International date line, changes in the date by 2 days.

12) All parallels of latitude have the same length.

13) The length of the meridian of longitude is half of the Equator.

14) The Prime Meridian passes through Delhi, India.

15) Political maps show natural features such as mountains, oceans and rivers.

Section D: Short Answer Questions (2 Marks each)

16) Why is it 6:30 pm in India when it is 1 pm in London?

17) Explain the role of longitude in time and date determination.

18) Write two features of a political and physical map.

19) Explain the components of map.

20) Delhi's and Bengaluru's latitudes are 29º N and 13ºN; their longitudes are almost the same i.e. 77ºE. How much will be the time difference in local time between these 2 cities?

Section E: Map-based question

21) Draw a simple map of your school showing playground, library, assembly hall, your classroom and staffroom. (5 marks)

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