TEACHING COMPETENCE OF STUDENT TEACHERS IN RELATION TO DIGITAL LITERACY, LEADERSHIP SKILLS AND ACADEMIC ACHIEVEMENT

Thesis Submitted to Nagaland University in partial fulfilment of the requirements for the award of the degree of

DOCTOR OF PHILOSOPHY (Ph.D) IN EDUCATION

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CERTIFICATE

This is to certify that the thesis entitled "**Teaching Competence of Student Teachers in relation to Digital Literacy, Leadership Skills and Academic Achievement"** which is submitted herewith for the Degree of Philosophy in Education of Nagaland University is the result of the original work completed by **Miss W. Yanponi Kithan (Regd. No. Ph.D/TED/00399)** under my supervision and guidance. That, to the belief and best of my knowledge, the work embodied in this thesis has not been studied earlier on the basis of the award of any previous degree in any other university or institute. This thesis is fit for submission and evaluation.

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DECLARATION

I, **W. Yanponi Kithan**, hereby declare that this thesis entitled "**Teaching Competence of Student Teachers in relation to Digital Literacy, Leadership Skills and Academic Achievement**" is my own work carried out under the supervision of **Dr. M. Rajendra Nath Babu**, Associate Professor, Department of Education, Nagaland University. The work embodied in this thesis has not been studied earlier on the basis of the award of any previous degree in any other university or institute. This thesis is submitted to the Nagaland University for the degree of Doctor of Philosophy in Education.

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LIST OF ABBREVIATIONS

NEP	National Education Policy
NCF	National Curriculum Framework
B.Ed	Bachelor of Education
UNESCO's	United Nations Educational, Scientific and Cultural Organisations
ICT	Information and Communication Technology
CBSE	Central Board of Secondary Education
INSET	In-Service Teacher Education & Training
SCERT	State Council of Educational Research and Training
OHP	Overhead Projector
DIKSHA	Digital Infrastructure for Knowledge Sharing
SWAYAM	Study Webs of Active-Learning for Young Aspiring Minds
NCFTE	National Curriculum Framework for Teacher Education
COVID-19	Coronavirus Disease of 2019
NETF	National Education Technology Forum
CWSN	Children With Special Needs
DTH	Direct-to-Home
MHRD	Ministry of Human Resource Development
MOOCs	Massive Open Online Courses
NC	National Coordinator
NISHTA	National Initiative for School Heads' and Teachers' Holistic Development
NCFECCE	National Curriculum Framework for Early Childhood Care and Education
NCFSE	National Curriculum Framework for School Education
NCFAE	National Curriculum Framework for Adult Education
NIC	National Informatics Centre
MoE	Ministry of Education
UTs	Union Territories
TPACK	Technological Pedagogical Content Knowledge
SEM	Structural Equation Modeling

REACH	Risk-Taking Effectiveness Autonomy Collegiality Honor
OECD	Organization for Economic Co-operation and Development
GPA	Grade Point Average
IQ	Intelligence Quotient
JTTI	Junior Teacher Training Institute
D.El.Ed	Diploma in Elementary Education
NPE	National Policy on Education
NCTE	Nagaland College of Teacher Education
SCTE	State College of Teacher Education
M.Ed	Master of Education
UGTT	Under Graduate Teacher Training
ERC	Eastern Regional Committee
NCTE	National Council for Teacher Education
PFLS	Periodic Labour Force Survey
UG	Undergraduate
PG	Postgraduate
IBM SPSS	Statistical Package for the Social Sciences
TEIs	Teacher Education Institutions
DepEd	Department of Education
ELT	English language teaching
UAE	United Arab Emirates
MAI	Metacognitive Awareness Inventory
AMOS	Analysis of Moment Structures
RMSEA	Root Mean Square Error of Approximation
CFI	Comparative Fit Index
TLI	Tucker Lewis Index
Df	Degrees of freedom
CGPA	Cumulative Grade Point Average
MS	Master of Science
M.Phil	Master of Philosophy

Ph.D	Doctor of Philosophy
EFL	English as a Foreign Language
PLS-SEM	Partial Least Squares Structural Equation Modeling
e-learning	electronic learning
MCIS	Metacognitive Intervention Strategies
SES	Socio-Economic Status
HEC	Higher Education Commission
TGT	Trained Graduate Teacher
DIETs	District Institute of Educational Trainings
TTIs	Teacher Training Institutes
TLC	Teacher Leadership Competency
DLQ	Digital Literacy Questionnaire
LSS	Leadership Skills Scale
KR-20	Kuder–Richardson Formula 20
M	Mean
SD	Standard Deviation
ANOVA	Analysis of Variance
N	Number of observations
SS	Sum of Squares
MS	Mean Squares
P-value	Probability value

CHAPTER - I
INTRODUCTION

1.1. Introduction

Education as an instrument for manifesting all round development, especially economic, social and political development of nation has been generally accepted by all well-known thinkers and educationist since time immemorial. Through education complete transformation is demonstrated at the behest of the individual abilities wherein he/she contributes meaningfully to society. The guiding forces to bring these desired changes in the individual rest with teachers, 'who constitute a critical component of the essential learning conditions for achieving the desired educational goals' (NEP 2020). It further emphasized that teachers need to be elevated through teaching profession and must attract the best and brightest minds. The National Curriculum Framework NCF 2005, NEP 2020, also acknowledge the fact that professional skilled and competent teachers are vital in ensuring quality education and effective learning outcomes. As per NEP 2020 document teachers' motivation and quality fall short of the ideal levels as a result of inadequate teacher preparation, recruitment, deployment, service conditions, and empowerment. Thus far, it suggested a significant number of merit-based scholarships to be established nationwide for improvement of 4-year integrated B.Ed. programs in order to guarantee that exceptional individuals, particularly those from rural areas, enter the teaching profession receiving training in high quality content and pedagogy (NEP, 2020).

One of UNESCO's major concerns is the provision of well-trained, supported, and qualified teacher. Under 'Quality Education through the Education 2030 Framework for Action', it advocates Member States to "ensure that teachers and educators are well-resourced, efficient, and efficiently managed systems, and that they are empowered, sufficiently recruited, well-trained, professionally qualified, motivated, and supported." It calls for a 21st century skills and competencies, inter-alia critical thinking, mastery in content, and problem solving (Hauge & Mork, 2021), effective communication and collaboration, and self-direction (Darling-Hammond, et al., 2017). Hauge & Mork (2021) identified three broad domains of 21st century skills. The 'cognitive domain' encompasses competencies pertaining to cognitive processes

and strategies such as critical thinking, reasoning, knowledge, and creativity. The 'intrapersonal domain' includes beliefs and motivation in learning, metacognition and self-regulated learning. The 'interpersonal domain' includes leadership and collaborative skills including accountability and communication. Thus, to meet the growing demands of modern advanced educational reforms the most prepared and qualified teachers who continuously enrich their skills, knowledge, and competence through effective training programmes and experiential lifelong learning need to be deployed to establish a robust ecosystem delving on quality educational outcomes in the society.

1.2. Teaching Competence

The word 'competency' and 'competence' is often used interchangeably. Competency is linked to a certain competence, but competence is a spectrum of capabilities within performance-related domains in a specific environment (Vimal & Kishor, 2021). Competence was described by McClelland (1973) as an attribute or habit that promotes better or more efficient work performance. Competence is thus regarded as an integrated collection of skills required to perform well in a certain situation. However, it is not evident if competence results from an act, an activity, or a personal trait (Ashworth & Saxton, 1990).

Teaching competencies can be understood as the process of developing the knowledge and skills necessary to carry out professional duties in an effective and efficient manner. Teaching competency includes controlling materials, overseeing learning programs, evaluating student progress, managing the classroom with the use of media resources, etc. (Singh, 2008). González, A., et. al. (2018) conceptualized it as an interaction of an integrated set of human qualities, such as knowledge and understanding, skills and abilities, and beliefs and values, which are necessary for successful performance in a variety of teaching contexts. Teaching competencies are closely related to the craft of teaching since they center on the teacher's position in the classroom (Caena, F., 2011). A factor influencing teachers' efficacy and commitment is professional competence, defined as a set of individual characteristics including knowledge, abilities, and beliefs that are needed for effective teaching (González, A., et al., 2018). The essential competencies of teachers to perform any classroom related task are pertinent as it exerts influence in teaching and learning.

Afalla, B., & Fabelico, F. (2020) concluded that pre-service teachers do exceptionally well in the classroom when they possess strong pedagogical skills, and they frequently exhibit low teaching efficacy when they lack these skills. According to AduYeboah & Yaw Kwaah (2018) (as cited in Afalla, B., & Fabelico, F., 2020) pre-service teachers should develop their professional skills, pedagogical knowledge, and self-confidence before entering the teaching profession. The knowledge, abilities, and attitudes required to effectively instruct in a classroom setting is considered as teaching competences within the context of this study.

1.2.1. Framework of Teaching Competence

Often teaching is considered a complex activity acquired through personal experience, life-learning and through continuous professional development through comprehensive teacher training programmes. The framework that constitutes the core competencies of teaching are studied extensively in research based on various context. Tuula Nousiainen., et. al. (2018) in their study examined the kind of competencies required in using game-based pedagogy. It identified four main areas of competence such as – *pedagogical, technological, collaborative* and *creative.* The European Union Commission listed eight key competences for lifelong learning – literacy, linguistic diversity, mathematical and scientific skills, digital competencies, the capacity to learn new skills, innovation, active citizenship, and expression of cultural diversity (Win Phyu Thwe & Anikó Kálmán, 2023). For self-improvement and career development of teachers Selvi (2010 as cited in Win Phyu Thwe & Anikó Kálmán, 2023) identified nine competencies in the profession, in research, in curriculum, in lifelong learning, in culture, in emotion, in communication, in ICT, and in environment.

The Central Board of Secondary Education (CBSE) a national level body for managing schools in India developed *Teachers' Self-Evaluation Framework* for developing competency in various aspects. It identified eighteen major aspects relating to daily life practices such as – *Communication Skills, Subject Competency, Professional Development Measures, Stakeholders' Satisfaction, Ethical Standards, Gender Sensitivity* etc. for capacity building of teachers. Similarly, the INSET Cell of SCERT created the Teacher Competency Framework, a guidebook that outlines the essential knowledge and abilities that teachers must possess in order to provide

holistic development of students during the teaching learning process. The framework encompasses three domains – Domain 1: children at the centre in creating safe and conducive learning environment; Domain 2: collective as partners through collective leadership beyond the classroom; Domain 3: core as a teacher by building excellence in teacher practice.

Vimal & Kishor (2021) identified various components of teaching competence for developing teaching competencies among teachers:

i) Planning Lesson- it relates to the ability of teacher to organize classes with the lesson objectives in mind, as well as to plan and direct creative activities that captivate students' attention and promote learning.

ii) Classroom management- it is the ability of the teacher to control the classroom climate by offering a variety of educational activities.

iii) Knowledge of subject- it refers to teachers' mastery of the subject, appropriate choice of material to teach, knowledge of the students' ages etc. to promote learning.

iv) Competencies related to working with parents, community and other agencies- it refers to teachers' ability to interact with various agencies involved in teaching learning process.

v) Evaluation process- it is the ability to use variety of evaluation techniques to provide remedial measures in learning.

vi) Time management- it is the ability of teacher to effectively manage time while providing information to pupils.

vii) Interpersonal relationship- it is the teacher's ability to build strong and positive relationships with both students and co-workers.

viii) Developing of teaching learning material- this refers to the ability of the instructor to create engaging lesson plans and creative teaching methods, such as creating worksheets.

An empirical study by Singh, V. K. (2010) identified five types of competencies for primary school teachers:

i) Competencies related to other educational activities- it is the development of values through co-curricular activities in school as part of learning.

ii) Contextual competencies- teachers' familiarity of the education system at all levels international, national, and at grass root level.

iii) Transactional competencies- it involves teachers' effective transaction of curriculum by incorporating the psychological principles, philosophical theory, and sociological aspects of teaching.

iv) Content competencies- teachers' ability to achieve full mastery level of content taught in teacher education programmes.

v) Competencies to develop teaching learning material- it is the ability of the teacher to develop appropriate teaching learning materials to improve their professional standards.

In the words of Singh & Sheojee (2019), prospective teachers need to possess certain 21st century competencies which are as follows:

i) Demonstrates leadership – Instructors can show leadership in the classroom by participating in cooperative and collegial professional development activities and by recognizing the qualities or essential components of a strategy for school reform.

ii) Provide positive environment – teachers create an atmosphere where each kid has a positive, nurturing interaction with caring adults.

iii) Content knowledge – teacher demonstrate a sufficient level of subject-matter expertise in their area of specialization and motivating students to delve further into the subject to spark their interest and broaden their understanding.

iv) Facilitates learning for their students – teacher facilitates learning through all round development of the child.

v) Reflect on students learning – effective teachers reflect and analyze their teaching based on pupils learning.

vi) Collaborates with teachers and staff – teachers collaborates to improve school outcomes.

1.3. Digital Literacy

The concept of 'digital literacy' was first seen in the works of Zurkowski (1974, as cited in Gutiérrez-Ángel Nieves et. al., 2022) where it comprehended as an ability to identify, locate, and examine information. Over the years the concept continues to evolve as evident from various literary sources. Lanham (1995, as cited in Feerrar, J.,2019) used the term digital literacy interchangeably with multimedia

literacy and described it as an "ability to understand information, however presented." Gilster (1997 as cited in Maria Spante et al., 2018) defines digital literacy as the "ability to understand and use information in multiple formats through computer." Gutiérrez-Ángel Nieves et. al. (2022) relates with reading, writing, calculation skills and effective use of technology in any situation. Different interrelated literacy's such as (Sparks et al., 2016; Hobbs, 2017; Hall et al., 2014 as cited in Feerrar, J., 2019) framed digital literacy emphasizing on –critical users of digital information; media consumption and creation; ability to use digital tools, aligning with computer literacy or information communication technology (ICT). In this paper the concept of digital literacy has been understood from usage and knowledge of computer or technology, where critical users understand the 'know how' and 'know what' of technology. Maria Spante et al. (2018) in their reviewed article had also indicated the "know-how" of digital literacy as an 'ability to understand and use information in varied ways through computer.' The 'know how' of technology includes those technically agile users who has the knowledge to handle, operate, manage, adopt and use computer hardware like desktop, printer, OHPs, interactive boards along with application and selection of various e-learning tools – google classroom, e-patshala, Diksha, Swayam, Google Meet, Skype etc. that are integrated in a techno pedagogical classrooms. While the 'know what' of technology relates to critical skilled users who carefully evaluate, analyse, select, and choose relevant information through varied sources of network. It connotes similar terms such as 'skill- based understanding' and 'skill adaptation' as argued by Maria Spante et al. (2018). Sharma and Sharma (2022), also asserts that "a digitally literate person knows how to select and use the digital technologies where, when, and in a purposeful way." Thus, the concept of digital literacy is varied and comprehensive in nature. It is defined as the knowledge, skills and ability to handle and manipulate any digital apparatus/equipment and make informed judgment about effective utilization of digital tools in today's ICT based classroom. Digital literacy has been understood in the context of how student teachers through their knowledge, ability, understanding, and skills access various available ICT resources in their techno pedagogical practices for effective educational outcomes and learning.

1.3.1. Characteristics of Digital Literacy

Digital literacy is one of the modern forms of literacy that is gradually expanded upon and added to previously developed abilities and information. Milanović, A., et. al. (2020) identified the characteristics of digital literacy as –

- The ability to carry out digital tasks in real-world settings, such as education, employment, leisure, and other facets of daily life.
- The degree to which someone is digitally literate depends on their personal circumstances; need to use digital technology, and future development.
- It additionally shares similarities with other literacies, such as media, visual, and information literacy.
- It comprises acquiring and employing knowledge, abilities, attitudes, and character traits. It also includes the capacity to plan, carry out, and assess digital activities in order to complete daily tasks, including self-criticism and the ability to analyze how digital literacy is developing generally.

It also clarified what is expected from student teachers after development of technical, cognitive, and socio emotional skills. The student-future teacher must be prepared to:

- Manage a computer's basic functions and regularly access information.
- Effectively find, identify, and assess data in order to conduct research and acquire knowledge on a subject.
- Gain proficiency in utilizing the most appropriate technical tools to complete tasks, resolve issues, and produce content.
- Act as responsible users in the internet and online community (Milanović, A., et al., 2020).

Singh & Sheojee (2019) identified the following dimensions to study the digital literacy of prospective teachers;

- Participation and understanding of digital practices
- Access and integrate information
- Critically evaluate information, online interaction and online tools
- Manage and communicate information
- Collaborate and share digital content

With emergent developments in education adapting and integrating technology in classroom is equally imperative to diligent educators, as the learning environment, both offline and online, will continue to progress over time. With these changes the demand for well-informed, efficient and competent digital educators will continue to grow with a new shift in responsibilities and capabilities due to digitalisation of education and growing digital economy meeting global standards therein. Various education commission and policies in India such as – NEP 2020, NCFTE 2009, NCF 2005 etc. has highlighted the use of digital resources in the teaching learning sector.

1.3.2. Initiatives on Digital Education in India

In India, digital education served as the only means of instruction for pupils throughout the COVID-19 pandemic. The Indian government has implemented various programs to provide virtual education using a wide range of applications, platforms, channels, and other resources. NEP 2020 also endorsed using technology in education, aiming toward digitally equipped classrooms where it proposed to set up the National Education Technology Forum (NETF) under National Mission on Education. It has also recommended that technology and pedagogical integration is vital in bringing improvements and transformation of educational outcomes. According to NEP 2020, education will be supported by technology in a way that will improve student experience, allow for personalized learning, and close the digital divide. The curriculum will include digital education as a core component, emphasizing the development of digital literacy, critical thinking, and problem-solving abilities.

Some of the digital education initiatives undertaken by government of India to revamp the education system are:

i) DIKSHA (Digital Infrastructure for Knowledge Sharing) – launched in 2017 under the "one nation; one digital platform" for Indian education, accessible through web portals and mobile applications to schools across all states for students in grades 1 to 12.

ii) VidyaDaan – this nationwide campaign is an appeal to the people of the country, especially the individuals and organizations spread throughout the nation, to provide e-learning resources in the field of education so that students all throughout India can continue to get high-quality instruction.

iii) PM e-Vidya – With PMeVidya, the Indian Ministry of Education is utilizing ICT to support education and make it easier for teachers and students to learn in schools. This is a novel and distinctive effort. Offering a wide range of educational resources in a multi-platform format, it provides digital and internet content for Divyangs (CwSNs), community radio, podcasts, and 12 DTH TV channels. It broadcasts instructional content in audio and video formats by utilizing the several streaming platforms that are accessible across the nation.

iv) ePathshala – it is a collaborative effort between the National Council of Educational Research and Training (NCERT), the Ministry of Human Resource Development (MHRD), the Government of India, and others. ePathshala was created in November 2015 to showcase and distribute all educational e-resources, including periodicals, audio, video, textbooks, and a wide range of other print and non-print materials.

v) MOOCs on SWAYAM – the National Council of Educational Research and Training (NCERT) designated as the National Coordinator (NC) for the creation and distribution of Massive Open Online Courses (MOOCs) for School Education, with a focus on Classes IX through XII. The "SWAYAM" (Study Webs of Active-Learning for Young Aspiring Minds) mobile app and portal will provide access to these courses.

vi) NISHTA – The National Initiative for School Heads' and Teachers' Holistic Advancement (NISHTHA) is a capacity building programme for "Improving Quality of School Education through Integrated Teacher Training." It was launched by Union Human Resource Development Minister Shri Ramesh Pokhriyal 'Nishank' in August 2019. The objective of this program is to develop the competencies of primary school principals and teachers alike. It is one of the largest teachers' training programme in the world. This extensive training program's primary objective is to empower and inspire teachers to support and nurture students' critical thinking.

vii) ICT –The Information and Communication Technology (ICT) in Schools program was introduced in December 2004 and revised in 2010 with the goal of giving secondary school students the chance to develop their ICT

skills and study through computer-assisted instruction. The Program plays a significant role in bridging the digital divide between students from different socioeconomic backgrounds and across other geographic boundaries.

viii) NCF Tech Platform – As per the National Education Policy, 2020, following four NCFs will be developed: National Curriculum Framework for Early Childhood Care and Education (NCFECCE), National Curriculum Framework for School Education (NCFSE), National Curriculum Framework for Teacher Education (NCFTE), and National Curriculum Framework for Adult Education (NCFAE). In view of this, a comprehensive Tech Platform will be developed by the NCERT and NIC, MoE. On this platform all the states/UTs will be provided with e-templates for the consultations, surveys, position papers, etc., and will continuously be supported by the nodal officers nominated at the central level. States will also nominate their nodal officers for smooth and speedy flow of this process.

Digital education will be gradually incorporated into the curriculum, beginning at the primary level, in accordance with NEP 2020. Students will have access to a variety of digital resources at the high school level, such as online tests, simulations, and interactive learning tools. Students will be able to study at their own pace and interact more deeply and interactively with the content as a result. With such major initiatives by the government of India, the techno-pedagogical skills of teachers are imperative to putting the policy into action.

1.3.3. Teaching Competence and Digital Literacy

The specific competences like digital competence of teachers have recently become of significant importance worldwide due to the COVID-19 pandemic (Dervenis, C., et al., 2022; Mercè Gisbert Cervera & Francesca Caena, 2022). Teacher training programs must concentrate on the collection of associated competencies, particularly on the digital competency, taking into account the difficulties posed by research and pedagogical leadership (Raúl González-Fernández et al., 2024). A systematic review by Tondeur et. al. (2017) revealed the reciprocal relationship between technology use and pedagogical beliefs; teachers' beliefs as perceived barriers; relationship between particular beliefs and categories of technology use;

function of beliefs in professional development; and significance of school context. José María Fernández-Batanero et. al. (2022) in their review concluded that majority of the selected studies showed that teachers lack the necessary training and have inadequate ICT knowledge. Hence it suggested inclusion of 'understanding of technological teaching knowledge (TPACK) and reasonable use of ICT for teaching and learning subjects' in teacher training programs to provide generalized information on the subject. Several empirical research studies (Bharti & Prasad, 2022); Singh & Singh, 2019); Udhayakumar & Pugalenthi, 2018); Sasikala & Nirmala, 2017) has drawn conclusion on the significant relationship between teaching competence and digital literacy. Hatlevik, O. E. (2017) results of the SEM analyses also indicated that 'teachers' self-efficacy in basic ICT predicts their self-efficacy in online collaboration.'

1.4. Leadership Skills

The concept of teacher leaders in education field is now widely accepted and debated among practitioners, and scholars, particularly in the educational leadership field (Kamaruzaman, et al., 2020). Teacher leaders assume varied role and responsibilities to improve the standards of school practices and their position is considered crucial as they engage in wide variety of activities to realize the educational goals. Kamaruzaman, Musa, & Hashim, (2020) defined teacher leadership as a process carried out by teachers, both individually and groups, in influencing the community of learners with the sole aim of providing good education to learners.

Teacher leadership captures that authentic educator who leads in the forefront to 'enhance teaching quality, school effectiveness, and student-learning (Nguyen, D., et al., 2019); focuses on 'actions that transcend the teacher's formally assigned roles, such as sharing practices and making changes' (Baker-Doyle, K. J. 2017). According to Harris (2015) teacher leadership is an effective way of building collective capacity to ensure and sustain a school and its system transformation. Additionally, some studies define teacher leaders based on 'leadership characteristics, strategic planning, address moral issues in learning community' (Meredith, 2006); teacher's attitude, professional and experts who are devoted to lifelong learning to enhance their knowledge and skills, collaborative school climate to achieve the standard goals established (Kamaruzaman, Musa, & Hashim, 2020). In this regard leadership can be

seen as teacher leaders who direct the learning system in educational settings to bring desired outcomes in creating effective educational system and influence the lives of the students, thereby establishing credibility in their workplace and beyond.

Leadership is characterized as complex phenomena as it can be conceptualized in different ways and thus requires varied definitions based on the nature of discipline or subject (Achua & Lussier, 2010). Northouse (2016) validates that there is a wide variety of different theoretical approaches to explain the complexities of leadership process. Leadership can be viewed from 'focus of group processes' where a leader assumes the core responsibility of group activities; from a 'personality perspective' special traits and characteristics that individual possesses defines leaders; from 'act or behavior' approach leadership is understood in terms of what leaders do to bring impact in organization (Northouse, 2016). All these different approach to leadership has been conceptualized in the study to define and understand teacher leaders. Thus, leadership skills refer to those characteristics that exhibits in teacher leaders who lead within and beyond the classroom, identify with and contribute to a community of teacher- learners and leaders, and exert influence towards improved educational practice (Meredith, 2006).

1.4.1. Dimensions of Leadership Skills

The dimensions of the leadership skills were framed by adopting the REACH model as it 'specifies action or behaviors of teacher leaders in educational setting' (Meredith, 2006). The idea of REACH model was modified taking into consideration the needs of the present contextual factors and after examining the various available literatures and pre available questionnaires related to leadership. To ascertain the behaviors or actions that defines a teacher leader the following dimensions were considered in the leadership skills – Risk-taking, Effectiveness, Autonomy, Collegiality, Ethics, and Vision.

i) **Risk-taking:** They are quick adapters in experimenting new things, and willing to undertake potential risk to transform negative situations into positive turnouts. These teachers identify and achieve the mission of the school besides implementing new approaches to teaching and school improvement process. Meredith (2006) lamented that the characteristic that defines teacher leader is their take-charge attitude

and the confidence and work ethic they set to accomplish goals. This action can be attributed to the 'Surgency dimension of Big Five model of personality', that includes leadership and extraversion traits. People strong in surgency personality traits want to be in charge due to their dominant behaviour. One of the Big Five traits of effective leaders considers 'self- confidence' as those leaders who are certain and have no doubt about their abilities, decision making, ideas and capabilities (Achua & Lussier, 2010).

ii) **Effectiveness:** Effective teachers are those teacher leaders who exhibit best practice, professional growth, and heart. The Hay McBer *Research on Teacher Effectiveness* acknowledge that accomplished teacher have vast amount of knowledge and expertise in their subject area, understand where difficulties are likely to arise and modify their practice accordingly (Tomlinson, 2004). Effective teachers knows that learning never ends and embedded part of their professional life, beliefs that teaching demands a continued commitment to the interrelationship of subject knowledge and educational practice (Meredith, 2006). Several teacher leadership models also identified teacher role and expertise in instructional practices where teachers enhance their knowledge and skills and act as essential resources for information and expertise in instructional practices (Kamaruzaman, Musa, & Hashim, 2020).

iii) **Autonomy:** Autonomy is understood as the capacity of teachers to make decisions in areas related to their work such as – curriculum planning, curriculum transaction evaluation etc. In autonomy organization teachers are given the independence and freedom to make choices about school curriculum, take decisions about their day-to-day operations (Meredith, 2006). A school climate that supports and acknowledge the opinions and voices of teachers pave way for school leadership and empowers teachers to lead with better student performance, 'particularly when this is linked with enhanced accountability'(Pont, B., et al. 2008). Kamaruzaman, Musa, & Hashim (2020) acknowledge that distribution of power from top to bottom

empowers teachers to take leadership roles and lead to improved school outcomes. According to Meredith (2006) autonomous leader takes initiative, practice independent thought in matters relating to school policies and programmes. They see school district curriculum outlines as guides and standards as goals and decide how to address and assess those standards for student outcomes.

iv) **Collegiality:** Brundrett (2003) says that 'collegiality can broadly be defined as teachers conferring and collaborating with other teachers.' When teachers act in a collegial manner every member is dependent and get along well with each other, and works collaboratively by sharing the responsibility. It is characterized by a democratic learning community where collective responsibilities are shared by each group. 'Collegial model assumes that organizations determine policy and make decisions through a process of discussion leading to consensus' (Bush, 2020).

Meredith, (2006) asserts that teacher leader in such community require problem solving skill, and conflict management skills. In a collegial workplace members trust each other and 'share common goals and vision and are committed to bring welfare and development in the organization' (Bush, 2020). 'What makes two people colleagues is common membership in a community, commitment to a common cause, shared professional values, and a shared professional heritage. Without this common base, there can be no meaningful collegiality' (Meredith, 2006).

v) **Ethics:** Ethics are moral principles that govern or influence a person's behaviour to act right and just (Oxford Dictionary). Teleological theories attempts to answer questions about right and wrong conduct by looking at results or outcomes. In other words, it throws light on person actions, conduct, and deeds that exerts influence on the educational outcomes of an institution. Northouse (2016) opines that, 'the consequences of an individual's actions determine the goodness or badness of a particular behaviour.' The deontological perspective focuses on the actions of the leader and his or her moral obligations

and responsibilities to do the right thing (Northouse, 2016). Virtue-based theories approach ethics from the viewpoint of a leader's character. The theory focuses on who you are as a leader and gives importance to the 'development and training of moral values' (Northouse, 2016).

vi) **Vision:** Vision has been defined as the 'development, transmission, and implementation of an image of a desirable future' as an essential quality of leaders in recent literature on leadership, effective schools, and excellent organization (Mariasse, 1985). Vision is a roadmap to a better future and nurtures life in an organization (Mariasse, 1985). Northouse (2016) opines that organization with clear vision makes it easier for people to learn and adapt with the overall direction within the organization and to society at large. Bennis and Nanus found that, to be successful, the vision had to grow out of the needs of the entire organization and to be claimed by those within it (Northouse, 2016).

1.4.2. Teaching Competence and Leadership Skills

The concept of teacher leaders in education field is now widely accepted and debated among practitioners, and scholars, particularly in the educational leadership field (Kamaruzaman, et al., 2020). Teacher leaders assume varied role and responsibilities to improve the standards of school practices and their position is considered crucial as they engage in wide variety of activities to realize the educational goals. Several teacher leadership models also identified teacher role and expertise in instructional practices where teachers enhance their knowledge and skills and act as essential resources for information and expertise in instructional practices (Kamaruzaman, Musa, & Hashim, 2020). There are strong empirical grounds validating that teachers do make a difference and can make a profound impact on student learning when accompanied with high quality teaching and strategic professional development (Meredith, 2006). The aim of teaching and learning improvement was achieved through the implementation of a range of leadership action tactics by educators. The first thing they did was set an example for specific professional attitudes and dispositions. These included being dedicated to their own professional growth and development, being open to different viewpoints and

methods of instruction, and being willing to take chances through advocacy and collaboration (Fairman & Mackenzie, 2015). Accordingly, an empirical study by Louis Langdon Warren (2021) concluded that students taught by teacher leaders have a high probability of succeeding academically as well as other areas of growth as compared to those taught under teachers who lack leaderships within and outside the classroom. Teachers must play a crucial role as facilitators in fostering the development of critical competencies and autonomous learning through individualized and collaborative approaches through management and decision-making roles (Caena, F., 2011).

1.5. Academic Achievement

The primary aim of education is academic achievement, which has been regarded as a crucial component of life. The intellectual growth of a student remains the key concern and the most significant objective of education, notwithstanding the numerous diverse claims made about its purposes. Both general and specialized learning experiences lead to academic progress where students demonstrate proficiency and competence in the subject taught. Academic achievement is defined as knowledge acquired and skill developed in school subjects, typically indicated by test scores or teacher-assigned marks. The importance of academic accomplishment cannot be overstated, since it serves as a criterion for selection, promotion, and recognition in a variety of fields.

1.5.1. Factors affecting Academic Achievement

Previous studies have focused a great deal of attention on the pupils' academic success. Psychological, economic, social, personal, and environmental elements all have an impact on pupils' performance. The GPA was used by most researchers worldwide to evaluate students' performance. The grade point average or GPA was used to assess each student's performance for a given semester (Singh, S. P., et al., 2016). Accordingly, *learning facilities, communication skills and proper guidance by parents* have a significant impact on student performance (Singh, S. P., et al., 2016). An empirical study by Nasreen & Naz (2013) concluded that parental involvement, teacher teaching style, socioeconomic status, peer pressure, and motivation were affecting student’s achievement. Studies also indicated that individual differences in personality and intelligence have been related to differences in academic success.

Stumm, V. S., et. al., (2011) in their study concluded that pupils who score better on IQ tests and who exhibit greater conscientiousness typically perform well in academic settings.

Furthermore, non-cognitive factors which are set of 'attitudes, behaviors, and strategies' are also associated with academic and professional success. According to Gutman & Schoon (2013), factors such as academic self-efficacy, self-control, motivation, expectancy and goal setting theories, emotional intelligence etc. are associated with academic outcomes. Academic motivation and academic achievement were found to be positively and significantly correlated. Additionally, there was a substantial correlation between academic accomplishment and the subscales - task, effort, competition, and social concern subscales (Kourosh Amrai, et al., 2011). Another important factor in raising academic achievement is the role that teachers play.

The value of academic success in a student's holistic development is recognized by aspiring educators. A teacher's job is to help a student reach his or her maximum potential by helping them strengthen their academic skills. It should be the duty of educators to shape students into productive members of society and scholars.

1.5.2. Teaching Competence and Academic Achievement

Teaching competency understood as identifiable effective teaching behaviors or composite skills are requisite for the transaction of the content, aimed to bring desired learning outcomes (Singh, V. K., 2010). Teachers' psychological characteristics such as personality or self-efficacy have been linked to teaching effectiveness and pupil outcomes (Esther López-Martín et al., 2023). The impact of teaching competence on education through empirical studies has shown positive outcomes in terms of academic achievement. For instance (Banerjee, 2017) in experimental research found that in a project evaluation strategies the mean achievement scores of students taught by teachers with high competence was better than students taught by teachers with low competence. The variable teaching competence in most empirical studies has mostly been associated with pupils' performance or learning outcomes (eg: Husain, R., et al., 2022); Ali, Z., et al., 2020; Batool, S., et al., (2018); Kumar, V., 2013). Few studies studied the construct of variables teaching competence and academic performance on pre-service teachers (eg: Sujata & Reddy, 2011); Aslan, M., & Bakir, A. A., 2017); Vecaldo et al., 2017).

According to Aslan & Bakir (2017), prospective teachers are of the opinion that the teaching profession can be achieved with 'a moderate level of academic competence.'

1.6. Background of the Study Area

Nagaland was established as the 16th state of the Indian Union on 1st December 1963, and it subsequently developed into a fully administrative body located in the northeast of India. The Indian Constitution, in Article 371(A), provides particular provisions to protect the religious and cultural activities of the Naga people in accordance with their customs, laws, and traditions. Nagaland is situated between the Brahmaputra River Valley and Myanmar, and referred to as one of the seven sisters of the Northeast. It is located with an area of 16579 sq. km² and is located between the longitudinal lines 93°20'E and 95°15'E and latitudes 25°60° and 27°40° north of the equator. It shares borders with Assam on the west, Manipur borders it on the south, Arunachal Pradesh and portions of Assam border it on the north, and Myanmar borders it on the east.

As per 2011 census, literacy rate in Nagaland stands at 79.55 as compared to 66.60 during 2001 census which is an increase of 19.44 %. The female literacy rate has increased from 61.50 during 2001 to 76.11 during 2011. District of Mokokchung has the highest female literacy rate of 91 % on the other hand district of Kiphire has the lowest female literacy rate of 64 % indicating urgent government intervention to check the imbalances in the female literacy rate.

1.6.1. Teacher Education in Nagaland

The term "teacher education" or "teacher training" describes policies, practices, programs, and resources intended to give prospective teachers the skills, knowledge, attitudes, and behaviors they need to carry out teaching at many levels in educational institutions, such as Pre-Primary, Primary or Elementary, Secondary, and Senior Secondary. The type of teacher trainee in teacher education is categorized as – Pre-service and In-service teacher trainees. Pre-service education prepares student teachers to take up future profession in teaching, and In-service teacher education programs are designed to help teachers who are currently serving in various government educational institutes to advance their professional career.

The concept of state teacher education emerged in the middle of the 1950s to increase teachers' ability to teach, particularly in primary schools. In those days, the majority of the teachers were under matriculated and untrained where it necessitated a training facility be established for the teachers. For this reason, the first training center in Nagaland was established in 1955 at Chiechama village in Kohima district and was funded by Hindustani Talmi Sangh. Eventually, the training facility was renamed as the Junior Teacher Training Institute (JTTI), and two more JTTI locations were established in Mokokchung and Tuensang districts in 1962 and 1964 respectively (Longchar & Limala, 2017). However, these training institutes were confined mainly to elementary level of schooling also known to be a D.El.Ed. trained teachers which is an envisioned policy of NPE 1986. The state government initially established the Nagaland College of Teacher Education (NCTE) currently now known as State College of Teacher Education (SCTE) specifically for secondary school teachers in Kohima in 1975 in partnership with North-Eastern Hill University. The B.Ed. and Under Graduate Teacher Training (UGTT) are administered by Nagaland College of Teacher Education (NCTE) (Kikon, A., & Amarsweren, N., 2020). SCTE was the first teacher education institutions in Nagaland to be granted recognition to take up M.Ed. course with an intake capacity of 35 starting from academic session 2014-2015 vide ERC (Eastern Regional Committee) order No.21793 dated 08.11.2013 followed by revised order with an intake of 50 (one basic unit) from academic session 2015-2016 vide No. 31791 dated 20.05.2015 as per NCTE Regulations, 2014 subject to certain requirements and to comply to the same to ERC. However, the recognition granted to SCTE for M.Ed. course was withdrawn under section 17(1) of NCTE Act, 1993 starting from academic session 2020-2021 as the institution was found deficient of required conditions as per NCTE norms 2014. As such the government managed SCTE institute in Nagaland at present caters to needs of the secondary teachers through B.Ed. course in Nagaland.

In 1995 nearly after a gap of twenty years Salt Christian College, the first private B.Ed. College was established in Nagaland. The number of privately managed B.Ed. colleges in Nagaland was 7 in total. However, due to deficiency in requirements as per NCTE norms 2014 the recognition granted to URA College of teacher education was withdrawn under section 17(1) of NCTE Act, 1993. Hence, at present there are only 6 private B.Ed. colleges in Nagaland. The total number of recognized

B.Ed colleges including both private and government in Nagaland is 8, out of which 2 colleges are managed by government and 6 colleges are managed by private entity. The list of recognized B.Ed. colleges along with intake capacity is presented in the table below:

Table 1.1: **List of B.Ed. Colleges and intake capacity in Nagaland State**

Sl.No	Name of the College	Management	Intake Capacity
1	State College of Teacher Education, Kohima, Nagaland	Government	50
2	Mokokchung College of Teacher Education, Mokokchung , Nagaland	Government	50
3	Salt Christian College of Teacher Education, Dimapur, Nagaland	Private	100
4	Bosco College of Teacher Education, Dimapur, Nagaland	Private	100
5	Unity College of Teacher Education, Dimapur, Nagaland	Private	100
6	Modern Institute of Teacher Education, Kohima, Nagaland	Private	100
7	Sazolie, College of Teacher Education, Kohima, Nagaland	Private	50
8	Mount Mary College, Chumukedima, Dimapur, Nagaland	Private	100
	Total		**650**

Source:https://nagalanduniversity.ac.in/English/admissions/2021/BED_prospectus.pdf

1.7. Need and Significance of the Study

One of UNESCO's major concerns is the provision of well-trained, supported, and qualified teacher. Under 'Quality Education through the Education 2030 Framework for Action', it advocates Member States to "ensure that teachers and educators are well-resourced, efficient, and efficiently managed systems, and that they are empowered, sufficiently recruited, well-trained, professionally qualified, motivated, and supported." The professional preparation and nurturing of teachers is of paramount importance in context of ensuring quality education for all. AduYeboah & Yaw Kwaah (2018 as cited in Afalla, B., & Fabelico, F., 2020) also stated that pre-

service teachers should develop their professional skills, pedagogical knowledge, and self-confidence before entering the teaching profession. Teaching competence of teachers need to be ensured at the very outset during pre-service courses and thus, it is quite logical to focus on this factor throughout teacher preparation programmes all over the world.

Technology in modern times had transformed the teaching learning process as it offers numerous techniques to assess learning and enhance learning outcomes. With emerging developments in education adapting and integrating technology in classroom is equally imperative to diligent educators, as the learning environment both offline and online, will continue to progress over time. With these changes the demand for well-informed, efficient and competent digital educators will continue to grow bringing a new shift in responsibilities and capabilities due to digitalisation of education meeting global standards therein. NEP 2020 has also recommended that technology and pedagogical integration is vital in bringing improvements and transformation of educational outcomes. Technology aids in designing new learning environments where it meets the needs of teaching and learning by using digital tools (Mercè & Francesca, 2022).

The concept of teacher leaders in education field is now widely accepted and debated among practitioners, and scholars, particularly in the educational leadership field (Kamaruzaman, et al., 2020). Teacher leaders assume varied role and responsibilities to improve the standards of school practices and their position is considered crucial as they engage in wide variety of activities to realize the educational goals. Caena, F. (2011) emphasized that teachers must play a crucial role as facilitators in fostering the development of critical competencies and autonomous learning through individualized and collaborative approaches through management and decision-making roles.

Moreover, teachers' psychological characteristics such as personality or self-efficacy have been linked to teaching effectiveness and pupil outcomes (Esther López-Martín et al., 2023). Today, teachers not only need to ensure that their academic achievement is improving but must simultaneously enhance and develop their workforce that aligns with 21st century skills with a holistic personality to fit in the role. Findings predict that personal characteristics, pedagogy, professional,

information and communication technology (ICT), as well as school management and development are significant contributors to 21st century skills (Sulaiman et al., 2020).

The study will help the entire fraternity of teacher education institutions – principals, teacher educators, and especially the young educators who are entrusted to shape the education system in the country. Their understanding of the significance of competence required in teaching to improve their methods in the classroom will advance their professional career and enable them to deliver high-quality instruction. A well-resourced, efficient, well-trained, and professionally qualified teacher will ensure to bring improvements in the classroom which is essential in today's ICT skilled based classroom.

Thus, choosing the right teacher training programs is essential from the very beginning of pre-service training where student teachers get the exposure to refine the required skills such as – teaching competence, digital literacy, leadership skills and their academic achievement so that they will manage the classroom effectively and deliver quality education in the process. Therefore, the topic of the current study is extremely important from an academic, social, and professional standpoint for student teachers who will eventually work at the teaching institution.

In Nagaland, although the literacy rate stands at 80.1% many youths after completion of their education are left unemployed. According to Annual Periodic Labour Force Survey (PFLS) 2021-22, Nagaland holds the fourth highest unemployment rate in the country (*Nagaland Post, July 2023*). One of the reasons is due to high preference for government jobs and lack of skilled workers. One of the key challenges that need urgent intervention in Nagaland education system is to ensure that students are equipped with the necessary knowledge and skills so that they can thrive successfully in the 21st century. This requires attention in teacher training so that competent teachers can identify the strength and skills of pupils and promote guidance and awareness to pursue the right vocation and skills. On this account the need and emergence of the study was designed with the hope of providing generalized information and awareness on the importance of teaching competence of student teachers to provide quality education and enhance learning outcomes.

1.8. Statement of the Problem

In a knowledge driven society, knowledge has become the supreme asset where youths can become a participatory citizen only by acquiring it. Today rapid

progress and advancement in science has led to major transformation in the society. To be a part of this transitional society we need to be proactive by driving our educational capabilities to new levels. Individual abilities will continue to grow by leaps and bounds, and without the knowledge of these changes and capabilities, one might be left behind. Hence, it requires attention in teacher training programs so that competent teachers can identify the strength and skills of pupils and promote guidance and awareness to pursue the right vocation and skills. Their competence and knowledge will serve as a leverage to bridge the gap in fostering a culture of learning and development in the teaching profession. To the best of the researchers' knowledge and based on a search of peer-reviewed databases, no previous research on the teaching competency of student teachers in Nagaland state has been carried out taking into account each of the significant variables, including teaching competence, digital literacy, leadership skills, and academic achievement. On this account the need and emergence of the study was designed with the hope of providing generalized information and awareness on the importance of teaching competence of student teachers to provide quality education and enhance learning outcomes. Therefore, the present study has emerged and will be entitled as **"Teaching Competence of Student Teachers in relation to Digital Literacy, Leadership Skills and Academic Achievement."**

1.9. Variables of the Study

Dependent Variable: Teaching Competence.

Independent Variables: Digital Literacy, Leadership Skills, Academic Achievement.

Demographic Variables: Gender, Educational Qualification, Pedagogy, Age.

1.10. Objectives of the Study

1) To determine the level of Teaching Competence of student teachers.
2) To determine the level of Digital Literacy of student teachers.
3) To determine the level of Leadership Skills of student teachers.
4) To determine the level of Academic Achievement of student teachers.
5) To compare mean scores of student teachers teaching competence with respect to gender.

6) To compare mean scores of student teachers teaching competence with respect to age.
7) To compare mean scores of student teachers digital literacy with respect to gender.
8) To compare mean scores of student teachers digital literacy with respect to age.
9) To compare mean scores of student teachers leadership skills with respect to gender.
10) To compare mean scores of student teachers leadership skills with respect to age.
11) To compare mean scores of student teachers academic achievement with respect to gender.
12) To compare mean scores of student teachers academic achievement with respect to age.
13) To study the influence of student teachers educational qualification on teaching competence.
14) To study the influence of student teachers pedagogy on teaching competence.
15) To study the influence of student teachers educational qualification on digital literacy.
16) To study the influence of student teachers pedagogy on digital literacy.
17) To study the influence of student teachers educational qualification on leadership skills.
18) To study the influence of student teachers pedagogy on leadership skills.
19) To study the influence of student teachers educational qualification on academic achievement.
20) To study the influence of student teachers pedagogy on academic achievement.
21) To study the correlation between teaching competence and digital literacy of student teachers.
22) To study the correlation between teaching competence and leadership skills of student teachers.
23) To study the correlation between teaching competence and academic achievement of student teachers.

24) To study the correlation between digital literacy and leadership skills of student teachers.
25) To study the correlation between digital literacy and academic achievement of student teachers.
26) To study the correlation between leadership skills and academic achievement of student teachers.
27) To study the joint contribution of digital literacy and leadership skills in predicting teaching competence of student teachers.
28) To study the joint contribution of digital literacy and academic achievement in predicting teaching competence of student teachers.
29) To study the joint contribution of leadership skills and academic achievement in predicting teaching competence of student teachers.
30) To study the joint contribution of digital literacy, leadership skills and academic achievement in predicting teaching competence of student teachers.

1.11. Hypotheses of the Study

1) There is no significant difference in the mean scores of teaching competence between the groups of student teachers in terms of gender.
2) There is no significant difference in the mean scores of teaching competence between the groups of student teachers in terms of age.
3) There is no significant difference in the mean scores of digital literacy between the groups of student teachers in terms of gender.
4) There is no significant difference in the mean scores of digital literacy between the groups of student teachers in terms of age.
5) There is no significant difference in the mean scores of leadership skills between the groups of student teachers in terms of gender.
6) There is no significant difference in the mean scores of leadership skills between the groups of student teachers in terms of age.
7) There is no significant difference in the mean scores of academic achievement between the groups of student teachers in terms of gender.
8) There is no significant difference in the mean scores of academic achievement between the groups of student teachers in terms of age.

9) There is no significant influence of student teachers educational qualification on teaching competence.
10) There is no significant influence of student teachers pedagogy on teaching competence.
11) There is no significant influence of student teachers educational qualification on digital literacy.
12) There is no significant influence of student teachers pedagogy on digital literacy.
13) There is no significant influence of student teachers educational qualification on leadership skills.
14) There is no significant influence of student teachers pedagogy on leadership skills.
15) There is no significant influence of student teachers educational qualification on academic achievement.
16) There is no significant influence of student teachers pedagogy on academic achievement.
17) There is no significant relationship between teaching competence and digital literacy of student teachers.
18) There is no significant relationship between teaching competence and leadership skills of student teachers.
19) There is no significant relationship between teaching competence and academic achievement of student teachers.
20) There is no significant relationship between digital literacy and leadership skills of student teachers.
21) There is no significant relationship between digital literacy and academic achievement of student teachers.
22) There is no significant relationship between leadership skills and academic achievement of student teachers.
23) There is no significant joint contribution of digital literacy and leadership skills in predicting teaching competence of student teachers.
24) There is no significant joint contribution of digital literacy and academic achievement in predicting teaching competence of student teachers.

25) There is no significant joint contribution of leadership skills and academic achievement in predicting teaching competence of student teachers.
26) There is no significant joint contribution of digital literacy, leadership skills and academic achievement in predicting teaching competence of student teachers.

1.12. Operational Definition of the Key Terms Used

Teaching Competence: Teaching competence refers to the set of knowledge, abilities and beliefs a teacher possess that are needed for effective teaching.

Digital Literacy: Digital literacy is the ability to handle and manipulate any digital apparatus/equipment and make informed judgment about effective utilization of digital tools.

Leadership Skills: It refers to those abilities that exhibit in teacher leaders who lead within and beyond the classroom, and influence others towards improved educational practice.

Academic Achievement: In the present study academic achievement was indicated on the basis of the marks obtained by Second Year (3^{rd} semester) B.Ed. student teachers in their respective pedagogy of school subject enrolled for academic session (2021-2023).

Gender: Gender is classified as male and female in the present study.

Educational Qualification: It refers to student teachers status of their education or degree completed. It is classified as Undergraduate (UG), Postgraduate (PG), and Others include M.Phil. or Ph.D. degree.

Pedagogy: It refers to the area of specialization that student teachers belong to. It is categorized as Pedagogy of Mathematics, Pedagogy of Science, Pedagogy of English, and Pedagogy of Social sciences.

Age: It is the state of being young or old. It is categorized into – below 30 years, and 30 years and above.

Student Teachers: A student teachers are learners who are registered in a secondary teacher training institution (B.Ed.).

1.13. Delimitations of the Study

- The study was delimited to B.Ed. colleges and student teachers in Nagaland affiliated to Nagaland University.
- The present study was confined to Second Year (3rd semester) B.Ed. student teachers who are undergoing B.Ed. teacher training programme in Nagaland.
- The study was limited by including only the aforesaid variables namely- teaching competence, digital literacy, leadership skills and academic achievement.
- The studies conducted on teaching competence, digital literacy, leadership skills and academic achievement of B.Ed. student teachers are included in the review of literature.

1.14. Tentative Chapterization of the Thesis

The thesis was presented in five chapters as indicated below:

Chapter – I	**:**	**Introduction**
Chapter – II	**:**	**Review of Literature**
Chapter – III	**:**	**Methodology**
Chapter – IV	**:**	**Analysis and Interpretation of the Data**
Chapter – V	**:**	**Summary, Findings, Discussion, Implications and Suggestions**

CHAPTER - II
REVIEW OF LITERATURE

2.1. Introduction

A crucial component of the research study is the review of related literature. To draw findings that are significant, an investigator must gather knowledge on previous research in the topic of inquiry. A summary of previously published works on a subject is called a literature review. A section of a scholarly work, like a book or article, or the entire publication might be referred to literature review. It is an ongoing process where similar or related literature is studied critically to give the researcher a broad overview of the body of information already known about the research topic chosen for study. A review of related literature can help define the research problem, recognize its significance, and suggest suitable tools for acquiring data, research designs, and data sources (Best & Khan, 2012).

In the present study the review of related is divided into two broad categories:

I. Studies done in abroad
II. Studies done in India

2.2. Studies Done in Abroad

The existing literature or studies conducted abroad on the variables – Teaching Competence, Digital Literacy, Leadership Skills, and Academic Achievement were included in this section.

2.2.1. Teaching Competence

Zakaria, Z. M., et. al. (2019) investigated the Content Knowledge Competency of Arabic Language Teacher Trainees during Teaching Practice on 58 trainee teachers, where the competency aspect was focused on three areas of Arabic language-specific knowledge. A descriptive research was employed in the study and data collected were analyzed using SPSS statistical analysis. The findings showed that the Arabic language trainee teachers' competency level in the field of Arabic morphology was good, but the knowledge of grammar and Balaghah/Adab Nusus was only at moderate level.

Afalla, B., & Fitzgerald, F. (2020) conducted a study on Pre-Service Teachers' Pedagogical Competence and Teaching Efficiency of a State University in Cagayan Valley Region, Philippines. The study was carried out using a descriptive-inferential statistics at Teacher Education Institutions (TEIs) and the Department of Education (DepEd) for three consecutive school years. Pre-service teachers consistently demonstrated a very high degree of pedagogical skill, according to the survey. Throughout the last three academic years, there has been a noticeable difference in their effectiveness as teachers. Pre-service instructors typically showed poor teaching efficiency when they demonstrated a low command of knowledge. As a result, pre-service teachers who showed a strong command of the subject matter typically exhibited exceptional teaching effectiveness. The exceptional pedagogical skill exhibited by pre-service teachers is indicative of their high teaching effectiveness.

Asmarani, A., Sukarno, S., & El Widdah, M. (2021) examined the relationship of Professional Competence with Teacher Work Productivity in Madrasah Aliyah through quantitative method on a sample of 30 teachers using a saturated sampling technique (census). The results of the study concluded that there was a positive and significant relationship between professional competence and teacher work productivity. The obtained r value of 0.826, indicated a strong relationship between professional competence and teacher work productivity.

Desiriani, D., Kristiawan, M., & Wardiah, D. (2023) conducted a quantitative research study on the Influence of Self-Efficacy and Work Environment on Teacher's Professional Competence. The population and sample in this study were high school teachers in Lais District are SMAN 1 Lais, SMAN 2 Lais and SMAN 3 Lais. The results of the study stated that there was a positive and significant effect of self-efficacy and the work environment on the professional competence of teachers.

2.2.2. Digital Literacy

Emre Çam & Mübin Kiyici (2017) employed quantitative survey method to study Perceptions of Prospective Teachers on Digital Literacy from a sample of 354 prospective teachers (244 females and 110 males) from the departments of Computer Education and Instructional Technology, Primary Teaching, Social Sciences, Psychological Counseling, Science and Technology, Pre-Schooling, Elementary

Mathematics, Teaching of Mentally Disabled, Turkish and English Teaching at Sakarya University College of Education. The study concluded that in terms of gender variable digital literacy levels of male prospective teachers were found high. However, personal income levels of prospective teachers had no effect on their digital literacy levels.

Öteles, Ülkü Ulukaya. (2020) conducted a study on the Examination of the Relationship between Lifelong Learning Tendency and Digital Literacy Level through relational screening model. The sample of the study groups consisted of 188 teacher candidates studying in the department of social studies teaching of a state university in Marmara Region of Turkey selected through criterion sampling technique. The findings indicated that digital literacy skills are at a medium level and digital literacy level of the teacher candidates varies according to gender, class and socio-economic levels. The findings also concluded that the relation between the lifelong learning tendencies and digital literacy level was moderate, positive and significant relationship.

Inan Karagul, B., et. al. (2021) conducted a study on Investigating Students' Digital Literacy Levels during Online Education Due to COVID-19 Pandemic by employing mixed method approach. A study sample consisting of 510 students representing different age groups was generated from different school degrees, namely, high school, university, masters' and doctorate through snowball sampling technique. The findings revealed that there is a statistically significant relationship between students' digital literacy and their gender and school degree, while age was not found to be a statistically significant variable. The qualitative self-reported data suggested that learners have sufficient levels of digital literacy, and major technology-related challenges were reported to be lack of the necessary technologies and difficulties in adapting to a new approach to learning.

Saripudin, S., et. al. (2021) through descriptive quantitative approach studied on Digital Literacy Skills of Vocational School Teachers to analyse the level of digital technology literacy skills of 371 vocational school teachers from 23 vocational schools in Kota Cimahi, West Java in Kota Cimahi, West Java. The results of this study show that teachers' digital literacy level is at level three of the six levels available. The results of this study also show that the teachers already have mastery

and understanding of the information and technology they need, and consistently use these standards as a reference for conducting activities.

Hairida, H., et. al. (2023) focused on assessing pre-service chemistry teachers' digital literacy using a quantitative method of multidimensional Rasch analysis. A total of 885 pre-service chemistry teachers from Indonesia's Kalimantan province were included in the sample. The results showed that pre-service chemistry teachers did better in the digital technical area of digital literacy than in the other areas, and there were no gender differences that were statistically significant based on pre-service chemistry teachers' abilities in sub-dimensions.

2.2.3. Leadership Skills

Dursun Katkat (2014) aimed to determine the leadership abilities of teachers from sports branch and other branches with a sample of 382 sporrts, 899 science and 641 social sciences teachers from different regions. The study concluded that there aren't any leadership level differences between sports teachers and other teacher's science and social sciences. It also found no significant difference in the leadership level of male and female teachers. Further, there isn't any relation found between leadership levels and the subjects' gender and age groups.

Serdar Kocaeksi., et. al. (2015) aimed to examine student control ideologies and leadership behaviors of physical education and sports teachers in terms of gender and job experience variables. The sample of the study were 45 female, 69 male, totally 114 volunteer physical education and sports teachers working for Ministry of Education. The findings revealed that there was a significant difference at supportive leadership sub-dimension in terms of gender at the comparison of gender and job experience variables. However, no significant difference was found in terms of peremptory leadership. Further, it concluded the reason for having significant difference at supportive leadership between female and male teachers at the scale might stem from females' being more understanding than males by birth. As to the results about occupational seniority variable, the result showed significant difference at peremptory leadership sub-dimension.

Sharar & Nawab (2020) investigated how Pakistani secondary school teachers in Lahore perceived their leadership style. Four private secondary schools sent one teacher to participate in the interview process. The data analysis revealed that

the participating teachers engaged in several facets of teacher leadership, including making decisions about education, mentoring new teachers, organizing school events, and fostering community connections. However, none of the participating instructors had any role to improve teacher influence or professionalize teaching when compared to the Kentucky Teacher Leadership foundation (2015), which served as a conceptual foundation for this study. A four-dimensional situated model that exemplifies contextually placed teacher leadership practice is the research's noteworthy output.

Serigne Mbaye Gningue., et. al. (2022) examined the relationship between teacher leadership and school climate from a teacher-leadership project where seventy project participants responded to teacher-leadership survey and 891 personnel from 42 schools participated in school climate survey. Findings indicated little relationship between school climate and teacher-leadership development. However, a more detailed analysis showed that schools that encourage teacher-to-teacher interactions are likely to see personal growth and development in teacher leaders in their staff. The study recommended that if teacher-to-teacher interactions are encouraged, then teachers will increase their development as teacher leaders.

2.2.4. Academic Achievement

İsmail Hakkı Erten (2014) explored the Interaction between Academic Motivation and Student Teachers' Academic Achievement on a sample of 256 students enrolled in the English language teaching (ELT) department of a major state university located in Ankara, Turkey through descriptive method. Statistical results found that students had a reasonable high GPA with female students showing a slightly higher GPA than male students. It also revealed that GPA correlated negatively with academic motivation; positively with extrinsic identified regulation and intrinsic motivation dimensions of knowledge and accomplishment. Academic motivation emerged as the only predictor of GPA.

Abdellah Rasha (2015) studied the Metacognitive Awareness and its relation to Academic Achievement and Teaching Performance of Pre-service Female Teachers in Ajman University in UAE through descriptive correlation research. The sample constituted a total 75 pre-service of Professional Diploma Female Students in Ajman University, UAE. Results from the study concluded that 75 pre-service teachers academic achievement was correlation with each metacognitive knowledge ($r = 0.67$,

p< 0.05), metacognitive regulation(r = 0.78, p < 0.05), and total MAI score (r=0.81, p<0.05). It also found that students teaching performance of per-service teacher was correlation with each metacognitive knowledge (r=0.59, p<0.001).

Sikhwari, T. D. (2017) investigated the relationship between Motivation, Self-concept and Academic Achievement of Students at a University in Limpopo Province, South Africa through quantitative cross-sectional survey design. The sample constituted second year students selected randomly from four schools at the university. The study revealed significant correlations between self-concept, motivation and academic achievement of students. Further, female students were found to be significantly more motivated than their male counterparts.

Gustems-Carnicer, Jose., et. al. (2019) conducted a study on stress, coping strategies and academic achievement in teacher education students through quantitative and qualitative approach. The sample consists of 334 undergraduate university students at a Spanish university enrolled in a bachelor's degree course in either Early Childhood Education or in Primary Education. Perceived Stress ($r = -0.116$) was negatively related to academic achievement. The use of approach coping strategies (seeking guidance $r = 0.132$ and problem-solving $r = 0.172$) was positively related to academic achievement. Seeking support from family, friends or adults was positively related to academic achievement ($r = 0.163$), while resorting to more cognitive avoidance strategies was negatively related to academic achievement ($r = -0.215$). Further, regression analysis results indicated that cognitive avoidance, perceived stress, problem-solving and age explained 16% of the variance in academic achievement (F = 15.551, p = 0.0001), that is, approximately one-sixth of the variance in academic achievement is explained by these three variables.

2.2.5. Teaching Competence and Digital Literacy

Hatlevik, O. E. (2017) examined the relationship between teachers' self efficacy, their digital competence, strategies to evaluate information and use of ICT at school. A survey of 332 teachers as a sample participated in the study. A proposed model of the association between self-efficacy in basic ICT, self-efficacy in online collaboration, information evaluation techniques, digital competence, and ICT use was tested using structural equation modeling. The analysis verified that the proposed model was supported by the hypothesized model.

Tondeur, J., et. al. (2017) conducted a study on Understanding the Relationship between Teachers' Pedagogical Beliefs and Technology Use in Education: A Systematic Review of Qualitative Evidence. The findings of the 14 selected papers were reviewed using a meta-aggregative methodology. Five synthesis statements were summarized as the findings: (1) the reciprocal relationship between technology use and pedagogical beliefs; (2) teachers' beliefs as perceived barriers; (3) the relationship between specific beliefs and types of technology use; (4) the roles of beliefs in professional development; and (5) the significance of the school context.

Sen, N., & Yildiz, D. H. (2022) investigated the relationships between English Integrating Self-efficacy using a descriptive survey approach. A sample of 561 English teachers in Turkey was chosen using a non-random stratified purposive sampling technique. The study found that self-efficacy, professional competency, and lifelong learning tendencies were positively correlated with the use of technology by English teachers. It also revealed a significant variation in the self-efficacy of English teachers with regard to integrating technology, lifelong learning tendencies, and professional competences based on their gender. While English teachers' self-efficacy in integrating technology varied depending on the type of institution and age, but their professional competencies differ based on the type of institution.

2.2.6. Teaching Competence and Leadership Skills

Mohammad Aliakbari and Rahil Darabi (2013) investigated the relationship between efficacy of classroom management, transformational leadership style, and teachers' personality on 153 English teachers. Findings revealed positive relationship between transformational leadership style, personality factors, and efficacy of the classroom management. However, it found weak correlation between efficacy of class management and extraversion, openness, and neuroticism personality factors. It also revealed significant relationship between teachers' education level and classroom management efficacy and recommended providing leadership training along with professional knowledge to teachers.

Zembat, R., et. al. (2019) aimed to examine the relationship between pre-service preschool teachers' self-leadership skills and motivation to teach on 186 pre-service preschool teachers who are senior students at Department of Preschool Education at three universities in Istanbul. The obtained results found a significant

positive correlation between pre-service teachers' Self-Leadership Scale and Motivation to Teach Scale. It also revealed that behavior-focused strategies and constructive thought strategies of Self-Leadership Scale were in a significant positive relationship with both Intrinsic and Extrinsic Motivation dimensions of Motivation to Teach Scale. Additionally, there was a considerable difference in the mean Self-Leadership Scale scores of students based on their GPAs.

2.2.7. Teaching Competence and Academic Achievement

Rahman, M. H. (2014) studied Professional competence, pedagogical competence and the performance of junior high school of science teachers using quantitative correlation method on a sample of 61 science teacher of 72 science teachers using proportional stratified random sampling in 9 Junior High School in Ternate. The results of the study indicated that professional and pedagogical competence give positive effect on the performance of Junior High School science teacher.

Vecaldo, R., et. al. (2017) studied the Pedagogical competence and academic performance of pre-service elementary teachers in Tuguegarao City, Philippines by employing descriptive correlation research design. The sample for the study constituted 154 pre-service teachers and 154 supervising teachers in Tuguegarao City, Philippines. The study concluded insignificant relationship between the level of pedagogical competence and academic performance of pre-service elementary teachers. However, one dimension 'community service' was found to have a negative significant relationship with academic performance.

Omar, R., et. al. (2018) investigated a study to explore on Importance of Teachers' Competency through Students' Perception in Relationships between Parental Involvement and Motivation with Students' Achievement by adopting quantitative cross-sectional research methodology. The questionnaire was administered on a sample of 430 students from 13 vocational colleges all around Peninsular Malaysia through random stratified sampling technique where accumulated data were analysed through Structural Equation Modeling (SEM) by using AMOS 22.0. Result of analysis showed that the hypothesized model had fulfilled the fitness indexes criteria where RMSEA = 0.062, CFI = 0.954, TLI = 0.936 and Chi square/ df = 2.404. The studies recommended on the improvement of

theoretical model for the relationship of teachers' competency, parental involvement, achievement motivation and students' achievement in the Malaysian education system.

2.2.8. Digital Literacy and Leadership Skills

Sevgi Kaya-Kasikci., et. al. (2023) investigated the predictive roles of proximal variables (self-efficacy, attitudes toward technology integration, and perceived norm) and distal variables (leadership, ICT training, trust, and enabling structure) in teachers' technology integration behaviors. The participants were 11,245 Turkish public school instructors teaching at the elementary, middle, and high school levels. The results of structural equation modeling indicate that, despite leadership's distal end of the model placement showing no direct connection to technology integration, it is crucial because it sets up the development of a favorable environment.

2.2.9. Digital Literacy and Academic Achievement

Onivehu, A. O., et. al. (2018) examined The Relationship among ICT Utilization, SRL and Academic Performance of Prospective Teachers through ex-post facto design (correlation method) and respondents were 580 prospective teachers who were drawn using multi-stage sampling technique from University of Ilorin, Nigeria. The findings revealed that prospective teachers have a high level of ICT utilization, self-regulation and academic performance; gender did not influence prospective teachers' ICT utilization, self-regulation and academic performance; there was a significant relationship between Information Communication Technology utilization and self-regulated learning and that there was a significant composite relationship among ICT utilization, self-regulation (elaboration, organization, critical thinking, metacognition, peer learning and help seeking) and academic performance of prospective teachers.

Abbas, Q., et. al. (2019) examined the Digital Literacy Effect on the Academic Performance of Students at Higher Education Level in Pakistan through mixed method approach. A sample of 800 M.S/M.Phil & PhD students studying at higher education institutions in Punjab province were selected by employing random sampling technique. Findings revealed that digital literacy had significant effects on

communication skills, research skills and confidence of the students and insignificant effect on students' CGPA.

Cecilia Obi Nja., et. al. (2022) studied students' attitude and academic achievement in a flipped classroom through quasi non-equivalent, non-randomized factorial design. A 30-item pre-attitude test questionnaire was distributed to 100 students in the study to determine their attitudes toward chemistry. Both the experimental and control groups received a pre-test. The experimental group was then taught utilizing the flipped classroom strategy, whereas the control group received instruction using the conventional method. According to the results of an analysis students' attitudes about chemistry were shown to be favorable when taught utilizing a flipped classroom approach. Academic achievement was examined, and the results showed that pupils' achievement was significantly higher than that of the conventional group.

Ting Yin., et. al. (2023) investigated into the connection between Chinese EFL language learners' academic engagement and their use of social networks. The researcher invited 591 EFL students from Guangdong Province, China, to participate in the study using a convenience selection technique. The findings showed a significant and positive relationship between students' use of social networks, their ethnographic factor (age), and their academic engagement. However, learners' use of social networks is not influenced by other ethnographic characteristics like gender and educational level. Additionally, there is a strong and positive correlation between the amount of use of social networks for entertainment and components of academic engagement which are cognitive, emotional, and socio-behavioral factors.

Faizan Ali., et. al. (2024) explored how technology fatigue and techno stress in hospitality and tourism schools affect students' academic performance as a result of compulsive e-learning. For data analysis, 329 respondents' obtained data were run using PLS-SEM. The study's conclusions showed that excessive e-learning usage causes technological stress and weariness, which impaired students' academic performance in the hospitality and tourism fields. The results of this study offer essential guidance for managing technology use and e-learning in hospitality and tourism schools.

2.2.10. Leadership Skills and Academic Achievement

Shen, J., et. al. (2020) in their meta-analysis examined the association between teacher leadership and student achievement and revealed that teacher leadership was positively related to student achievement (r = 0.19). Out of the seven dimensions of teacher leadership facilitating improvements in curriculum, instruction, and assessment has shown strongest relationship with student achievement. Further, the results of subgroup analysis indicated the relationships were similar among studies conceptualizing teacher leadership and using outcome measures differently, and for elementary and secondary school students.

Louis, L. W. (2021) explored the Importance of Teacher Leadership Skills in the Classrooms and its relationship to student performance and achievement. The study involves a synthesis of evidence in education literature that describes the concept of teacher leadership and student performance. The findings reveal that teacher leaders, whether outside or within the classroom, are driven by the desire to improve student learning. Students taught by teacher leaders have a high probability of succeeding academically as well as other areas of growth as compared to those taught under teachers who lack leaderships within and outside the classroom.

2.3. Studies Done in India

The existing literature or studies conducted in India on the variables – Teaching Competence, Digital Literacy, Leadership Skills, and Academic Achievement were included in this section.

2.3.1. Teaching Competence

Fathima, M. P., et. al. (2014) adopted experimental method to understand the Enhancing Teaching Competency of Graduate Teacher Trainees through Metacognitive Intervention Strategies (MCIS) using Pre-test, Progressive teat and post design. The investigation was carried out in Alagappa University College of Education, Tamilnadu, South India on a sample of 30 teacher trainees in of Physical Science. One of the major finding of the study concluded that there is significant correlation between post assessment of MCIS and teaching competency in physical science.

Sindu, P., & Malik, U. (2015) explored the Study of Teaching Aptitude of B Ed Pupil Teachers in relation to their Teaching Competency and Intelligence using

descriptive survey method on a sample of 600 B. Ed. pupil teachers from the colleges of Gurgaon, Faridabad, Mewat and Rewari by employing stratified sampling technique in the study. It was found that there is no significant difference between teaching aptitude and teaching competency of B.Ed pupil teachers. It further shows that teaching aptitude and teaching competency of B.Ed pupil teachers does not affect each other. The study reveals that there is no significant relationship between teaching aptitude and teaching competency overall and with respect to gender and locality.

Vasantha, S., & Ushalaya, R. D. (2016) conducted a study on Teaching Goals Teaching Skills Teaching Competency of Student Teachers and Hidden Values of B Ed Curriculum through Survey method. A sample of 758 B.Ed. student-teachers were chosen through stratified random sampling technique, where 280 student-teachers were selected from government institute, 235 student-teachers from self-financing institute, and 243 student-teachers from government aided institute. The result of the study revealed that at post-test 2 level the teaching competency of student-teachers did not differ based on gender. However, the teaching competency of student teachers differed based on the student teachers education qualification, medium of instruction and locality. It also concluded that Teaching Competency and other variables such as Hidden Values, Teaching Goals, and Student-Teachers' Teaching Skills have a positive correlation.

Mehta, A., & Vashishth, K. (2020) conducted a study of Teaching Aptitude in Relation to Teaching Competency among the Prospective Teachers through descriptive survey method. Through random sampling method a total sample of 227 prospective teachers were selected for the study, where 55.9% teachers belonged to government funded institutes and 44.1% teachers belonged to private funded institutes. The study concluded that there was no discernible difference between prospective male and female teachers regarding various aspects of teaching competency. The study also found that teaching competency is not affected by educational qualification of prospective teachers. It also concluded that no significant association was found between teaching aptitude and teaching competency of prospective teachers.

Vimal, V., & Kishor, N. (2020) conducted a study on Teaching Competence in relation to Teaching Aptitude Attitude towards Teaching and Sense of Responsibility among Secondary School Teachers through descriptive survey method.

A sample of 700 regular in-service teachers government school teachers were represented from seven districts of Punjab. The findings of the study revealed that gender and locality does not influence the teaching competence of secondary teachers. It also revealed that teaching aptitude, attitude towards teaching and sense of responsibility are significant predictors of teaching competence.

Bosco, M., & Harichandan, D. (2021) examined the Experience of Flow and Creativity in Relation to the Teacher Effectiveness of Upper Primary School Teachers through descriptive survey method with a sample of 344 upper primary school teachers in Greater Mumbai. The correlation analysis has revealed a significant relationship between the experience of flow and teacher effectiveness. The regression equation estimates 35.9% as the influence of the experience of flow on teacher effectiveness. The study also found no significant relationship between creativity and teacher effectiveness.

2.3.2. Digital Literacy

Nachiappan & Jeyashankar (2015) investigated on Information and Computer Literacy Skills among research scholars of Alagappa University Karaikudi Tamilnadu. A sample of 484 research scholars was selected through simple random sampling technique for the study. The findings of the study revealed that respondents are thorough with the basic operations of the computer with overall mean score of 2.72, and the overall mean value of word processing skills is 2.74, spreadsheet skills is 2.65 and presentation skills is 2.69, respondents were also well versed in e-mail skills and they used email for communication purpose effectively (2.73).

Kuriakose, L., & Marian, P. (2019) conducted a study on Digital Literacy and Moral Sensitivity among Higher Secondary Students of Kerala through normative survey method. It adopted stratified random sampling technique to select 931 Higher Secondary Students studying in standard XI from various schools belonging to four educational districts in Kottayam. The study concluded that that majority of Higher Secondary Students (609) possess average level of Digital Literacy, there existed a moderate negative correlation between Digital Literacy and Moral Sensitivity, and there was no significant difference in the relationship between Digital Literacy and Moral Sensitivity of Higher Secondary Students with respect to Gender, Locale, Stream of Study, Type of Management, and SES.

Ahmed, S., & Rasheed, T. (2020) explored the Relationship between Personality Traits and Digital Literacy Skills: A Study of University Librarians through survey method where a total of 360 questionnaires were distributed, out of which 255 received as valid with a response rate of 71%. The data were collected from library professionals working in the Higher Education Commission (HEC) recognized university libraries including both private and public sector of Punjab. The findings of the study revealed significant relationships between personality traits and all digital literacy skills. The study concluded that librarians having the extraversion trait are more inclined toward digital literacy skills and they can perform well in the libraries as compared to professionals with other traits.

Metha, V., & Yadav, S. (2021) investigated a study on the attitude of Teacher Educators and Prospective Teachers towards ICT in Nagaland by adopting descriptive survey method on a sample of 46 teacher educators and 200 prospective teachers through random sampling technique. The result of the study stated a significant difference in the attitude of prospective teachers towards ICT based on gender and pedagogy. However, no significant difference was found based on management in the attitude of prospective teachers towards ICT.

Parida, A. & Rout, S. (2021) conducted a study on Status and Issues of Digital Literacy of Secondary School Teachers through descriptive survey method and sample of 40 secondary school teachers in Odisha were selected through purposive sampling technique. The study found that majority of teachers can change screen brightness and contrast, minimize, maximize and move window screen, use search command to locate a file and download and install applications in their devices. Most of them are aware about computer hardware devices and able to operate those. They are using digital technologies for searching, sharing and collecting data for educational practices. The study also found out that TGT science teachers are more efficient than the TGT arts teachers and teachers below age group of 35-40 are more efficient in using digital technologies than the adults.

Das, A., Chetia, J., & Goswamee, G. (2023) investigated a study on Attitude of Teachers towards Utilization of Information and Communication Technology (ICT) in Secondary Schools of Assam with special reference to Kamrup District through descriptive survey method. The sample size of 400 teachers was selected through simple random sampling technique. The study concluded that there existed no

significant difference between the attitude of urban and rural teachers towards utilization of ICT in secondary school teachers, and no difference existed between the attitude of the junior (unexperienced) and senior (experienced) teachers. However, a significant difference between the attitude of male and female secondary school teachers was found in the study.

2.3.3. Leadership Skills

Sheeba Beracah, K. L., & Sadananthan, M. (2011) studied the impact of emotional intelligence and co-curricular participation on leadership potential of prospective teachers through survey method where 900 samples were selected through stratified random sampling technique. The study concluded that there is no significant difference between prospective teachers in their leadership potential with regard to gender, subject of study, and type of family. However, a significant difference was found between prospective teachers in their leadership potential with regard to type of college. Further, it found significant correlation among emotional intelligence, co-curricular participation and leadership potential of prospective teachers as a whole.

Shamsuddin, K., & Rajendra, R. (2017) investigated the Efficacy of Training Programme in improving Engineering Students Communication Skills Leadership Skills and Managing Stress in relation to Campus Recruitment through quasi- experimental research where 240 responded to questionnaire, 160 students fall under Experiment. The findings found significant association among the variable of communication skills, leadership skills and symptoms of stress as perceived by engineering students. It also revealed significant difference between the students of nuclear and joint family on communication skill and leadership skill but no significant difference was found between male and female students on communication skill, leadership and symptom of stress. Further, significant difference was found among the students who attended training programme on the variable leadership skills. It also revealed significant difference in the Experimental and Control group after the training Programme on the measures of i) Communication Skill, ii) Leadership Skill and iii) Symptoms of Stress.

Muhammedali, P. I., & Mumtaz, B. (2019) adopted a co-relational descriptive survey method to study the Influence of leadership skills managerial skills and institutional climate perception on the work engagement of among 382 higher

secondary school teachers of Kerala through Stratified sampling technique. Findings of the study concluded that there is a significant difference in the mean scores of Leadership Skills, Managerial Skills and Work Engagement between Male and Female Higher Secondary School Teachers. It also found significant difference in the mean scores of leadership skills with regard to gender, age, subject specialization, and type of management of schools.

Lotha, M., & Babu, M. Rajendra Nath. (2021) through descriptive survey method conducted a study of Educational Leadership among Secondary School Teachers in Wokha District on a sample of 200 secondary school teachers from 35 schools through random sampling technique. The study found that educational leadership of secondary school teachers on the basis of gender, age, management and locality was insignificant.

Pandey, J. (2021) conducted a study of Leadership Behavior of Secondary School Principals of Bareilly through quantitative research method by using random sampling method, the sample of the present study consists of 100 principals (50 male and 50 female) of 100 schools of Bareilly district. The findings revealed significant differences in leadership behavior of school principals with reference to the type of institution, gender and locality. Private school principals revealed higher level of leadership behavior in comparison to government college principals. Further, with reference to gender, female principals showed higher level of leadership behavior in comparison to male counterparts and in aspects of locality, very few significant differences were found between urban and rural school principals.

Nasrin & Biswas, K. (2022) aimed to determine how prospective teachers' leadership behaviors are influenced by their gender, level of education, and location through a quantitative approach. The study was conducted by the investigators with 319 aspiring teachers from 14 colleges in the Indian region of Murshidabad. The results of this study demonstrated that while locale had a significant impact on the leadership behavior of aspiring teachers, gender and educational attainment had no discernible effect. It is discovered that although there was no statistically significant difference, female prospective teachers had higher mean scores than male prospective instructors. Although there was no statistically significant difference, postgraduate prospective teachers scored higher on mean tests than graduate prospective teachers.

2.3.4. Academic Achievement

Arumugam, G. (2014) conducted a study on Academic Achievement and Emotional Maturity of B. Ed. trainees in Cuddalore district through descriptive survey method. A sample of 300 B.Ed. trainees was drawn through stratified random sampling technique. Results from study concluded that no significant difference exists in their academic achievement scores based on gender, family type and locality. Further, correlation analysis revealed a positive and significant relationship between academic achievement and emotional maturity.

Illahi, B. Y., & Khandai, H. (2015) studied the Academic Achievements and Study Habits of College Students of District Pulwama through descriptive survey method. Samples of 410 college students were selected on the basis simple random sampling technique. Findings concluded significant difference in college student's academic achievement based on gender and locality. Female college students performed better in their academic achievement. With regard to study habits female students were higher than the male students.

Geethadevi, Y., & Kalaimathi, H. (2019) studied the Academic Achievement of B.Ed. Teacher Trainees with Gender and Locality through descriptive survey method. A sample of 300 B.Ed. teacher trainees was selected from Chittoor district of Andhra Pradesh by employing standardized procedure. The findings concluded a significant influence on academic achievement of B.Ed. teacher trainees based on gender, locality, residence and educational qualification. Female and Urban B.Ed. Teacher trainees performed better in their academic achievement; Hostler and PG qualified B.Ed. Teacher trainees performed better in their academic achievement.

Deepa, K., & Saminathan, B. (2020) conducted a study on Emotional Intelligence Social Maturity and Academic Achievement in Education among the B Ed Students through normative survey method. Samples of 600 B.Ed. students were drawn through simple random sampling from Karur, Namakkal and Salem Districts of Tamilnadu. Findings of the study concluded significant difference in their academic achievement in education based on gender, educational qualification, locality, age, and management. However, no significant difference was found based on stream of study and type of family in their academic achievement in education. Further, it concluded that significant relationship exists between emotional intelligence and

academic achievement, social maturity and academic achievement in Education of B.Ed. students.

Sutradhar, A., & Sen, S. (2022) examined the Effect of Different Dimensions of Emotional Maturity on Academic Achievement of B.Ed. Trainees through descriptive survey method. The sample included 100 B.Ed. trainees from colleges of Birbhum District (West Bengal) studying in 1st semester. The study results indicated a significant difference between emotional maturity and its few dimensions, such as emotional progression and independence among trainees with respect to academic achievement. But no variation was found in the aspects of emotional stability, social adjustment, and personality integration among B.Ed. trainees with their academic achievement. Further, a significant correlation was found between emotional maturity and academic achievement.

Yaden, Y., Rai, R., & Imtisungba. (2022) examined the Correlates of Emotional Intelligence and Academic Achievement of the College Students of Nagaland through descriptive survey method. The sample in the study constituted 1000 college students studying in 6th semester from 11 government colleges and was drawn through random sampling technique. The findings revealed no significant difference in their academic achievement based on gender and stream of study. It also found a weak correlation between Emotional Intelligence and Academic Achievement of the college students.

2.3.5. Teaching Competence and Digital Literacy

Sasikala, V. H., & Nirmala, D. S. (2017) conducted a study on ICT Awareness Teaching Skills and Teaching Competency of B.Ed. Trainees through normative survey method. The sample for this study consisted of 1030 B.Ed. trainees from twelve different institutions of education (government, government aided, and self funding) in the following districts: Chennai, Thiruvallur, Thiruvanamalai, Kancheepuram, Karaikudi, and Salem drawn through purposive random sampling. The study concluded that ICT awareness, teaching skills, and teaching competency of B.Ed. trainees differed significantly among B.Ed. trainees based on gender and type of management. It also concluded that significant difference existed among B.Ed. trainees in their ICT Awareness and Teaching Skills based on educational qualification. However, no difference was found in their Teaching Competency with

respect to educational qualification. The ICT Awareness and Teaching Competency of B.Ed. Trainees also showed a highly significant positive correlation.

Udhayakumar, P., & Pugalenthi, N. (2018) conducted a Study of ICT Skills and Self Esteem on Teaching Competency among B Ed Teacher Trainees of Tamil Nadu through normative survey research technique. A sample of 1100 students studying in 12 B.Ed. colleges was selected from 7 districts through stratified random sampling technique. The findings of the study revealed a significant difference among B.Ed. trainees in their ICT skills, Self-Esteem and Teaching Competency based on gender, educational qualification, stream of study, and age group. The study also found a significant relationship between ICT skills and Teaching competency of B.Ed. trainees.

Jayavel, G., & Kalaivani, S. (2019) examined the Teaching Competency of English Teachers in relation to Digital Literacy Work Values and Personality Traits through normative survey method. The sample in the study constituted 310 secondary and higher secondary teachers from Cuddalore district which were drawn through cluster sampling technique. Findings of the study revealed a significant difference in the teaching competence of English language teachers based on gender and their professional qualification. It also found a significant difference in the digital literacy of English language teachers based on gender. However, no significant difference was found in the digital literacy of English language teachers based on their professional qualification. The teaching competence and digital literacy of English language teachers were found to be positively and significantly correlated.

Senthilmurugan , D., & Sivasakthi, R. T. (2019) examined the Teaching Competency of B.Ed. Trainees in Relation to their Personality ICT Knowledge and Attitude Towards Teaching through descriptive survey method. The investigator selected a sample of 1152 B.Ed. trainees using a random selection technique. The findings of the study concluded that teaching competency and its dimensions differed significantly based on stream of study and gender. It found that the teaching competency and its dimensions namely - classroom behavior; attitude towards student; and instructional strategy differed significantly based on age. It also found that the teaching competency and its dimension - instructional strategy differed significantly based on educational qualification. The study concluded that ICT knowledge and its dimensions differed significantly based on age. However,

insignificant difference was found among male and female B.Ed. trainees in their ICT knowledge. It found that ICT knowledge and its dimensions - effective teaching, economic impact, creative thinking and life based learning differed significantly based on educational qualification. A high level of positive correlation was found between personality, ICT knowledge and attitude towards teaching of B.Ed. trainees.

Sobha & Maikhuri, R. (2021) studied the Teacher Techno Pedagogical Competency of Senior Secondary Teachers in relation to their Teaching Style and Teacher Effectiveness by adopting a normative survey design. The multistage stratified random sampling approach was used to choose the study's samples. The final sample was organized into 411 teachers, where 82 teachers were selected from Pauri Garhwal, 106 teachers were selected from Udham Singh Nagar, 123 teachers were selected from Dehradun, and 100 teachers were selected from Nainital districts respectively. Findings of the study found insignificant difference in their techno-pedagogical competency of senior secondary school teachers based on gender and stream of study. It also found insignificant difference in their teacher effectiveness of senior secondary school teachers based on gender and stream of study. The variables teaching effectiveness, teaching style, and techno-pedagogical competency of senior secondary school teacher showed that these variables were closely related. Teacher effectiveness was found to be a good predictor to measure the techno-pedagogical competency of senior secondary school teachers. A multiple regression analysis also revealed a correlation between all of these variables, and that the techno-pedagogical competency of senior secondary school teachers was significantly impacted by teacher effectiveness and teaching style.

Yadav, D., & Sarkar, S. (2021) conducted a Study of Constructive Learning Environment Work Motivation ICT Teaching Attitude and Participation in School Activities of Student Teachers under two year B Ed programme through descriptive research method. A random sampling technique was employed to gather data from 438 student teachers. The findings of the study concluded that there was no discernible difference in the ICT teaching attitudes of male and female student-teachers under the two-year B.Ed. program. It also found that ICT teaching attitude of student teachers did not differ significantly based on educational qualification and teaching experience under the two-year B.Ed. program. However, a significant difference was found between government and self finance student-teachers in their

ICT teaching attitude. The multiple regression analysis also found that constructive learning environment and work motivation jointly impact school activity participation of student-teachers during their internship.

Bharti, A. K., & Prasad, L. (2022) examined the Teaching Competency of University Teachers in Relation to their Social Intelligence and Use of Information and Communication Technology by adopting descriptive survey method. The investigator in the study employed purposive sampling technique to select institutions that offered technical courses, and stratified random sampling technique was also utilized to choose participants from each department. The sample constituted 600 University teachers drawn from 3 Central University and 3 State University of UP. The findings of the study revealed that teaching competence and uses of ICT among University teachers differed significantly based on stream of study (Arts, Science and Commerce). A moderate level of positive correlation was found between teaching competency and ICT in classroom teaching of University teachers. It also concluded that there was high positive correlation between teaching competency and social intelligence of University teachers.

2.3.6. Teaching Competence and Leadership Skills

Gopinath, K., & Sivakumar, P. (2018) using descriptive survey method in their study on Predictor Variables of Life Skills and Teaching Competencies of Prospective Students in College of Education on a sample of 100 B.Ed trainees from College of Education in Madurai district of Tamil Nadu through Purposive Sampling. The major findings on teaching competence concluded that majority of trainees around 70% agreed to have good contextual, content related, transactional, educational activities and management, and around 60 -70% trainees were undecided of their creative thinking, decision making and leadership. For the study, predictor variables such gender, age, marital status, subject, community, residing locality, and annual income of the family head were taken for the study. Through linear regression method it found that living locality positively contributed on life skills of trainees, and community and marital status was found to be the predictor variable of teaching competencies of trainees.

Meenakumari, N., & Premalatha, T. (2021) through descriptive and normative survey technique of research investigated on Self efficacy in relation to

problem solving skills and teaching competency of B. Ed student using stratified random sampling technique on a sample of 600 selected from different B.Ed colleges in Coimbatore District. The study concluded that there is a significant difference in of teaching competency of B.Ed student teachers on the basis of their locality and type of institutions. It was also found that there is a significant relationship between self-efficacy and teaching competency of B.Ed student teachers and also established that there is a significant relationship between problem solving and teaching competency of B.Ed student teachers.

Singh, J., & Thakur, M. (2023) examined the relationship of attitude towards teaching profession and leadership behavior among secondary school teachers through descriptive survey method. Utilizing a random sampling technique, 120 teachers from various schools in the Yamuna Nagar area of Haryana were chosen as a sample for the study. The findings of the study concluded that the attitudes towards teaching profession and leadership behavior of secondary school teachers were found to be positively and significantly correlated. It also revealed that gender, type of school and residential background of secondary school teachers does not influence their attitude towards teaching profession and leadership behavior.

2.3.7. Teaching Competence and Academic Achievement

Thangam, L. B., & Natesan, N. (2009) conducted a study on Personality Teaching Profession Perception Teaching Competency and Academic Performance of Secondary Grade Teacher Students through descriptive survey method. A random sample of 1000 pre-service secondary school teachers from 13 DIETs and 1000 pre-service secondary school teachers from 16 TTIs (Teacher Training Institutes) across several districts was chosen for the study. The findings of the study concluded that in terms of achievement in science education and teaching competency, there is no discernible difference between male and female student teachers. The academic background and teaching competency of student teachers in the arts and sciences varied significantly. It also found a significant difference in the perception of the teaching profession between male and female student teachers. The academic background and teaching competency of student teachers were found to have a strong positive correlation with science education achievement.

Sujata, R., & Reddy, Dayakara. V. (2011) conducted a study of academic achievement of B.Ed. students in relation to values attitude towards teaching profession and other variables through descriptive survey method. The study employed stratified random sampling in three stages to select a sample of 1,200 college students pursuing a B.Ed. degree. The findings of the study revealed that students' educational qualification, age, gender, methodology, type of family, has significant influence on the academic achievement of B.Ed. students. The study concluded that B.Ed. students' academic achievement is significantly influenced by their attitude towards teaching profession. It also found that attitude toward the teaching profession, democratic value, personality factor - F, personality factor - C, personality factor - A, personality factor - B, hedonistic value, power value, and personality factor - Q2 psychosocial variables were the greatest predictors of academic achievement score.

2.3.8. Digital Literacy and Leadership Skills

Nitin, Kalla., Bharati, Pujari., & Hemant, Kumar. (2023) examined how engineering students' use of ICT contributes to their skill development such as - research skills, digital skills, and problem-solving abilities. A sample of 152 respondents from different regions of Raipur, Durg-Bhilai city participated in the survey, which was carried out using a questionnaire. The findings of the study revealed that gender has little bearing on how ICT-enabled resources are used to improve problem-solving abilities. It also found that ICT use has no discernible impact on a person's ability to develop digital skills based on their gender. The study concluded that ICT use has no significant effect on the development of research skills based on gender.

2.3.9. Digital Literacy and Academic Achievement

Praveen, K. T., & Panneer, S. K. (2018) conducted a study on Knowledge Access and Attitude towards ICT among B.Ed. student teachers in relation to academic achievement in Bengaluru district Karnataka state using normative survey method of research. Through random sampling technique a sample of 600 B.Ed. student teachers were selected for the study. The findings concluded a significant difference on academic achievement of B.Ed. student teachers based on gender,

locality and management. It also concluded that significant difference exists among B.Ed. student teachers in ICT based on locality and management but no significant difference was found based on gender in ICT. Further, results revealed a significant positive correlation between ICT knowledge and academic achievements of B.Ed. student teachers.

Lavanya, S., & Pattnaik, P. K. (2022) investigated the Techno Pedagogical Skills and Academic performance among B.Ed Student Teachers in Nagaland through descriptive survey method. A sample of 100 B.Ed student teachers studying in 3rd semester was drawn through simple random sampling technique for the study. The findings of the study stated that there is no significant difference in the techno pedagogical skills among B.Ed student teachers based on gender, age, locality, stream and type of management. Further, a positive correlation was associated between techno pedagogical skills and academic performance among B.Ed student teachers.

Singh, V. K. & Mahejabin (2023) studied on ICT competency study habit and academic achievement of the B Ed students of Mahatma Gandhi KashiVidyaapith Varanasi through descriptive survey method. A sample of 500 B.Ed students was selected through simple random sampling technique for the study. The findings of the study concluded significant difference in ICT based on gender, stream of study, and locality but revealed an insignificant difference in academic achievement based on gender and locality. Based on stream of study it found a significant difference in academic achievement. Further, findings concluded significant correlation between ICT competency and academic achievement of B.Ed. students.

2.3.10. Leadership Skills and Academic Achievement

Dipali, P., & Shikare, A. P. (2016) examined the correlation of Social Intelligence Leadership and Academic Achievement of B.Ed. Students through survey and experiment method. The data was collected from 6 English medium B.Ed. colleges in Pune through purposive sampling method. Some of the major findings concluded no significant difference between the Leadership behavior qualities of B.Ed. students in terms of methods (arts & science) and education qualification (graduate & postgraduate. However, a significant difference was found between the leadership behavior qualities of male & female B.Ed. students. The co-relation

coefficient showed that Leadership behavior qualities are positive but negligible related with academic achievement and found no significant relationship.

Kannammal, R., & Pillai, J. (2018) examined the Emotional Intelligence Self Efficacy Leadership Traits and Academic Achievement of 600 B.Ed. Students through normative survey method. The sample of the study was selected using random sampling technique. The findings of the study concluded significant difference in leadership traits with respect to gender, type of college, subject and family type. It also found significant association between Leadership Traits and Academic Achievement, Self-Efficacy and Leadership Traits of the B.Ed students.

Varghese, M., & Chandrashekar, U. P. (2021) through mixed-method research attempted to study the Teacher Leadership Competency (TLC) and its Effect on Job Satisfaction and Student Outcomes from 500 secondary school teachers of Hassan district, Karnataka by adopting stratified random sampling technique. Results showed that sub-constructs of TLC (teacher mentoring, leadership of developmental tasks, and leadership of pedagogy) and Job satisfaction (workgroups, cognitively demanding work, supervision, incentives and rewards, and working environment) were positively correlated. A moderate positive correlation was found between sub-constructs of TLC and student outcomes. Further, the study revealed a significant difference in teachers' leadership competency based on their age and marital status and a significant variation in job satisfaction based on the age, total work experience of the teachers and their experience in teaching Science and Arts.

Raja, S., & Vellaichamy, K. (2022) through descriptive survey method examined the Superstitious beliefs Decision making Behaviour and Academic Achievement among B.Ed students from a stratified representative sample of 855 from Madurai, Dindigul, Theni and 227 Virudhunagar districts of Tamil Nadu. The obtained result showed no significant difference between decision making behavior of B.Ed students with regard to age and subject. However, significant difference was found on the decision making behavior of B.Ed students with regard to educational qualification and type of family. The findings also concluded that there is a significant and positive relationship between decision making behavior and academic achievement among the B.Ed.students.

2.3.11. Teaching Competence, Digital Literacy and Leadership Skills

Singh, M., & Singh, S. (2019) using descriptive survey method conducted a study on Teaching Competence of Prospective Teachers in relation to their Digital Literacy Inspirational Leadership and Creative Intelligence, where multistage random sampling technique was adopted to choose the sample of 443 prospective teachers in Himachal Pradesh. The study concluded that there is significant correlation between teaching competence and digital literacy, between teaching competence and inspirational leadership of prospective teachers. The study also concluded that there exists significant correlation among teaching competence, inspirational leadership and creative intelligence of prospective teachers. The variable of teaching competence is found associated with the variables digital literacy, inspirational leadership and creative intelligence. Digital literacy, creative intelligence and inspirational leadership were all found to be the predictors of teaching competence and contributed significantly to teaching competence of prospective teachers.

2.4. Summary of the Review of Conducted Literature

Table 2.1: Related Literature in Abroad

Variables	Authors	Variable studied	No. of studies	Year
Teaching Competence (TC)	Zakaria, Z. M., et. al. (2019); Afalla, B., & Fitzgerald, F. (2020); Asmarani, A., Sukarno, S., & El Widdah, M. (2021); Desiriani, D., Kristiawan, M., & Wardiah, D. (2023)	Teachers' Competence**;** Teachers' Pedagogical Competence and Teaching Efficiency**;** Professional Competence with Teacher Work Productivity**;** Influence of Self-Efficacy and Work Environment on Teacher's Professional Competence	4	2019 to 2023
Digital Literacy (DL)	Emre Çam & Mübin Kiyici. (2017); Öteles, Ülkü Ulukaya. (2020); Saripudin, S., et. al. (2021); Inan Karagul, B., et. al. (2021); Hairida, H., et. al. (2023)	Perceptions of Prospective Teachers on Digital Literacy**;** Relationship between Lifelong Learning Tendency and Digital Literacy**;** Digital Literacy Skills; Digital Literacy Levels**;** Digital Literacy	5	2017 to 2023

Leadership Skills (LS)	Dursun Katkat (2014); Serdar Kocaeksi., et. al. (2015); Sharar & Nawab (2020); Serigne Mbaye Gningue et. al. (2022)	Leadership abilities**;** Student control ideologies and leadership behaviors**;** Leadership style**;** teacher leadership and school climate	4	2014 to 2022
Academic Achievement (AA)	İsmail Hakkı Erten (2014); Rasha Abdellah (2015); Sikhwari (2017); Carnicer et. al. (2019)	Academic Motivation and Student Teachers' Academic Achievement**;** Metacognitive Awareness and its relation to Academic Achievement and Teaching Performance**;** Motivation, Self-concept and Academic Achievement**;** Stress, coping strategies and academic achievement	4	2014 to 2019
TC×DL	Sen, N., & Yildiz, D. H. (2022); Hatlevik, O. E. (2017); Tondeur, J., et. al. (2017)	Teachers' self-efficacy in integrating technology; teachers' self efficacy digital competence; Teachers' Pedagogical Beliefs and Technology Use	3	2017, 2022
TC×LS	Mohammad Aliakbari and Rahil Darabi (2013); Zembat, R., et. al. (2019)	Efficacy of classroom management, transformational leadership style, and teachers' personality; teachers' self-leadership skills and motivation to teach	2	2013, 2019
TC×AA	Rahman, M. H. (2014); Vecaldo et. al. (2017); Omar, R., et. al. (2018);	Professional competence, pedagogical competence and academic performance; Pedagogical competence and academic performance; Teachers' Competency Parental Involvement and Motivation with Students' Achievement;	3	2014 to 2018
DL×LS	Sevgi Kaya-Kasikci., et. al. (2023)	Leadership and Technology integration	1	2023

DL×AA	Onivehu, A. O., et. al. (2018); Abbas, Q., et. al. (2019); Cecilia Obi Nja., et. al. (2022); Ting Yin., et. al. (2023); Faizan Ali., et. al. (2024)	ICT utilization, self-regulation and academic performance; Digital Literacy Effect on the Academic Performance; attitude and academic achievement in a flipped classroom; academic engagement and use of social networks; technology fatigue techno stress and academic performance;	5	2018 to 2024
LS×AA	J. Shen et. al. (2020); Louis, L. W. (2021)	Teacher leadership and student achievement; Teacher Leadership Skills and student performance and achievement	2	2020, 2021

A total number of 33 studies were reviewed on studies conducted abroad. The literature review from abroad showed that studies were conducted on the construct teaching competence by Zakaria, Z. M., et. al. (2019); Afalla, B., & Fitzgerald, F. (2020); Asmarani, A., Sukarno, S., & El Widdah, M. (2021); Desiriani, D., Kristiawan, M., & Wardiah, D. (2023). Studies on digital literacy were conducted by Emre Çam & Mübin Kiyici. (2017); Öteles, Ülkü Ulukaya. (2020); Saripudin, S., et. al. (2021); Inan Karagul, B., et. al. (2021); Hairida, H., et. al. (2023). On Leadership skills construct studies were conducted by Dursun Katkat (2014); Serdar Kocaeksi., et. al. (2015); Sharar & Nawab (2020); Serigne Mbaye Gningue et. al. (2022). Studies on academic achievement were studied by İsmail Hakkı Erten (2014); Rasha Abdellah (2015); Sikhwari (2017); Carnicer et. al. (2019). Studies on teaching competence and digital literacy were also conducted by Sen, N., & Yildiz, D. H. (2022); Hatlevik, O. E. (2017); Tondeur, J., et. al. (2017)**.** Studies on teaching competence and leadership skills were conducted by Mohammad Aliakbari and Rahil Darabi (2013); Zembat, R., et. al. (2019). Studies on teaching competence and academic achievement was conducted by Rahman, M. H. (2014); Vecaldo et. al.(2017); Omar, R., et. al. (2018). It also found that the variable digital literacy was studied with the variable leadership skills by Sevgi Kaya-Kasikci., et. al. (2023). Digital literacy and academic achievement variables were studied by Onivehu, A. O., et. al. (2018); Abbas, Q., et. al. (2019); Cecilia Obi Nja., et. al. (2022); Ting Yin., et. al. (2023); Faizan Ali., et. al.

(2024). Leadership and academic achievement variable were studied by J. Shen et. al. (2020); Louis, L. W. (2021).

Table 2.2: Related Literature in India

Variables	Authors	Variable studied	No. of studies	Year
Teaching Competence (TC)	Fathima, M. P., et. al. (2014); Sindu, P., & Malik, U. (2015); Vasantha, S., & Ushalaya, R. D. (2016); Mehta, A., & Vashishth, K. (2020); Vimal, V., & Kishor, N. (2020); Bosco, M & Harichandan, D. (2021)	Teaching Competency; Teaching Aptitude Teaching Competency; Teaching Goals Teaching Skills Teaching Competency; Teaching Aptitude Teaching Competency; Teaching Competence Teaching Aptitude Attitude towards Teaching and Sense of Responsibility; Experience of Flow Creativity Teacher Effectiveness	6	2014 to 2021
Digital Literacy (DL)	Nachiappan & Jeyashankar (2015); Kuriakose, L., & Marian, P. (2019); Ahmed, S., Rasheed, T. (2020); Parida, A. &Rout, S. (2021); Metha, V., & Yadav, S. (2021); Das, A., Chetia, J., & Goswamee, G. (2023);	Information and Computer Literacy Skills; Digital Literacy and Moral Sensitivity; Personality Traits and Digital Literacy Skills; Status and Issues of Digital Literacy; attitude of Teacher Educators and Prospective Teachers towards ICT; Attitude of Teachers towards Utilization of Information and Communication Technology (ICT)	6	2015 to 2023
Leadership Skills (LS)	Sheeba Beracah & Sadananthan (2011); Shamsuddin & Rajendra (2017); Muhammedali and Mumtaz (2019); Lotha, M., & Babu, M. R. (2021); Pandey, J. (2021); Nasrin and Biswas (2022)	Emotional intelligence and co-curricular participation on leadership potential; Efficacy of Training Programme in improving Engineering Students Communication Skills Leadership Skills and Managing Stress; Influence of leadership skills managerial skills and institutional climate perception on the work engagement; Educational Leadership; Leadership Behavior of secondary school principals; prospective teachers' leadership behaviors	6	2011 to 2022

Academic Achievement (AA)	Arumugam, G. (2014); Illahi & Khandai (2015); Geethadevi and Kalaimathi (2019); Deepa & Saminathan (2020); Sutradhar & Sen (2022); Yaden & Rai (2022)	Academic Achievement and Emotional Maturity; Academic Achievements and Study Habits; Academic Achievement with gender and locality; Emotional Intelligence Social Maturity and Academic Achievement; Emotional Maturity on Academic Achievement; Correlates of Emotional Intelligence and Academic Achievement	6	2014 to 2022
TC×DL	Sasikala & Nirmala (2017); Udhayakumar, P., & Pugalenthi, N. (2018); Jayavel & Kalaivani (2019); Senthilmurugan& Sivasakthi (2019); Sobha & Maikhuri (2021); Yadav & Sarkar (2021); Bharti & Prasad (2022)	ICT Awareness Teaching Skills and Teaching Competency; ICT Skills and Self Esteem on Teaching Competency; Teaching Competency Digital Literacy Work Values and Personality Traits; Teaching Competency Personality ICT Knowledge and Attitude Towards Teaching; Teacher Techno Pedagogical Competency Teaching Style and Teacher Effectiveness; Constructive Learning Environment Work Motivation ICT Teaching Attitude and Participation in School Activities; Teaching Competency Social Intelligence and Use of Information and Communication Technology	7	2017 to 2022
TC×LS	Gopinath, K & Sivakumar, P. (2018); Meenakumari & Premalatha (2021); Singh, & Thakur (2023);	Life Skills and Teaching Competencies; Self efficacy Problem solving skills and teaching competency; attitude towards teaching profession and leadership behavior	3	2018 to 2023
TC×AA	Thangam & Natesan (2009); Sujata & Reddy (2011);	Personality Teaching Profession Perception Teaching Competency and Academic Performance; academic achievement values attitude towards teaching profession and other variables	2	2009, 2011

DL×LS	Nitin Kalla (2023)	Use of ICT contributes to their skill development	1	2023
DL×AA	Praveen & Panneer (2018); Lavanya & Pattnaik (2022); Singh & Mahejabin (2023);	Knowledge Access and Attitude towards ICT in relation to academic achievement; Techno Pedagogical Skills and Academic performance; ICT competency study habit and academic achievement	3	2018 to 2023
LS×AA	Dipali & Shikare (2016); Kannammal & Pillai (2018); Varghese & Chandrashekar (2021); Raja & Vellaichamy (2022);	Social Intelligence Leadership and Academic Achievement; Emotional Intelligence Self Efficacy Leadership Traits and Academic Achievement; Teacher Leadership Competency Job Satisfaction and Student Outcomes; Superstitious beliefs Decision making Behaviour and Academic Achievement	4	2014 to 2022
TC×DL×LS	Singh, M., & Singh, S. (2019)	Teaching Competence of Prospective Teachers Digital Literacy Inspirational Leadership and Creative Intelligence	1	2019

A total number of 45 studies were reviewed on studies conducted in India. The literature review from India showed that studies were conducted on Teaching competence by Fathima, M. P., et. al. (2014); Sindu, P., & Malik, U. (2015); Vasantha, S., & Ushalaya, R. D. (2016); Mehta, A., & Vashishth, K. (2020); Vimal, V., & Kishor, N. (2020); Bosco, M & Harichandan, D. (2021); digital literacy variable were studied by Nachiappan & Jeyashankar (2015); Kuriakose, L., & Marian, P. (2019); Ahmed, S., Rasheed, T. (2020); Parida, A. and Rout, S. (2021); Metha, V., & Yadav, S. (2021); Das, A., Chetia, J., & Goswamee, G. (2023); leadership skills variable were studied by Sheeba Beracah & Sadananthan (2011); Shamsuddin & Rajendra (2017); Muhammedali and Mumtaz (2019); Lotha, M., & Babu, M. R. (2021); Pandey, J. (2021); Nasrin and Biswas (2022); and academic achievement variable were studied by Arumugam, G. (2014); Illahi & Khandai (2015); Geethadevi and Kalaimathi (2019); Deepa & Saminathan (2020); Sutradhar & Sen (2022); Yaden & Rai (2022). The relationship between teaching competence and digital

literacy were studied by Sasikala & Nirmala (2017); Udhayakumar, P., & Pugalenthi, N. (2018); Jayavel & Kalaivani (2019); Senthilmurugan& Sivasakthi (2019); Sobha & Maikhuri (2021); Yadav & Sarkar (2021); Bharti & Prasad (2022); relationship between teaching competence and leadership skills (Gopinath, K & Sivakumar, P., 2018, Meenakumari & Premalatha, 2021, Singh, & Thakur, 2023); relationship between teaching competence and academic achievement (Thangam & Natesan, 2009, Sujata & Reddy, 2011)**;** relationship between digital literacy and leadership skills (Nitin Kalla, 2023); relationship between digital literacy and academic achievement (Praveen & Panneer, 2018, Lavanya & Pattnaik, 2022, Singh & Mahejabin, 2023); relationship between leadership skills and academic achievement (Dipali & Shikare, 2016, Kannammal & Pillai, 2018, Varghese & Chandrashekar, 2021, Raja & Vellaichamy, 2022); and one study studied the relationship between teaching competence, digital literacy and academic achievement (Singh, M., & Singh, S., 2019).

An overview of literature review from both India and abroad showed that researchers were keen on studying the factors that determine the teaching competence on pre-service teachers. The variables identified with teaching competence varied differently in each of the literature. Both the literature from India and abroad primarily concentrated on teaching competence by associating with various variables such as teachers' self efficacy (Desiriani, D., et al., 2023)**;** teaching efficiency (Afalla, B., & Fitzgerald, F., 2020); teacher work productivity (Asmarani, A., Sukarno, S., & El Widdah, M. (2021); self efficacy (Meenakumari & Premalatha, 2021); attitude towards teaching (Vimal & Kishor, 2022); school climate (Seshasree & Rao, 2002.

In review of literature abroad the construct digital literacy were studied in terms of age and income level by (Emre Çam & Mübin Kiyici, 2017)**;** gender, class and socio-economic levels (Öteles, Ülkü Ulukaya, 2020); gender, school degree, and age (Inan Karagul, B., et al., 2021); gender (Hairida, H., et al., 2023). The construct leadership skills with regard to gender were studied by **(**Dursun Katkat, 2014); gender and job experience variables (Serdar Kocaeksi., et al., 2015). The construct academic achievement was studied in terms of age by (İsmail Hakkı Erten, 2014; and Sikhwari, (2017).

In the review of literature in India the construct teaching competence was also studied with regard to various demographic profiles such as gender and locality

(Sindu, P., & Malik, U., 2015); gender, education qualification, medium of instruction and locality (Vasantha, S., & Ushalaya, R. D., 2016); gender and educational qualification (Mehta, A., & Vashishth, K., 2020); gender and locality (Vimal, V., & Kishor, N. (2020). The construct digital literacy with regard to gender, locale, stream of study, type of management, and SES was studied by (Kuriakose, L., & Marian, P., (2019); gender and pedagogy (Metha, V., & Yadav, S., 2021); gender, teaching experience, and gender (Das, A., Chetia, J., & Goswamee, G., 2023). The construct leadership skills with regard to gender, subject of study, and type of family was studied by (Sheeba Beracah, K. L., & Sadananthan, M., 2011); gender, type of family (Shamsuddin, K., & Rajendra, R., 2017); gender, age, subject specialization, and type of management (Muhammedali, P. I., and Mumtaz, B., 2019); gender, age, management and locality (Lotha, M., & Babu, R. N., 2021); gender and educational attainment (Nasrin & Biswas, K., 2022). The construct academic achievement was studied with regard to gender, family type and locality (Arumugam, G., 2014); gender and locality (Illahi, B. Y., & Khandai, H., 2015); gender, locality, residence and educational qualification (Geethadevi, Y., & Kalaimathi, H., 2019); gender, educational qualification, locality, age, and management (Deepa, K., & Saminathan, B., 2020); gender and stream of study (Yaden, Y., Rai, R., & Imtisungba., 2022).

The numbers of search terms that can be combined with the variables in the study are limited so alternate pair of search phrases were used intentionally in the study. In the present review 'teaching competence' AND 'teachers' self efficacy'; 'digital literacy' AND 'ICT'; 'Leadership skills' AND 'decision making' "problem solving skills' search terms were used as the researcher could not find the exact variable identified in the study. Hence, alternative terms that can be related based on the characteristics of the variables were included in the review.

To the best of researchers knowledge and through search in peer-reviewed databases no prior studies has been conducted on teaching competence of student teachers by including all the significant variables namely- teaching competence, digital literacy, leadership skills and academic achievement in Nagaland state. The current study is an attempt to bridge a little research gap in the enormous body of knowledge, with the hope of adding evidence to the research on the requirements of various skills or abilities that are needed by teachers to enhance learning outcomes.

CHAPTER - III

METHODOLOGY

3.1. Introduction

The research methodology deals with how the present study was carried out systematically to solve the research problem. It includes the scientific methods and procedure adopted by the researcher in designing the framework of the research problem to arrive at a logical conclusion and address the aims and objectives of the research study. It can be defined as 'a science of studying how research is done scientifically' (Kothari & Garg, 2019).

It includes a layout of what the investigator can do from writing the hypothesis and their operational inferences to the final survey of data (Kerlinger, 1973). The research problem was addressed systematically after considering the layout of the research design, population and sample, characteristics of variables, tools adopted, procedure of data collection, and statistical techniques employed to analyze and interpret the results.

In the present chapter the scope of methodology is explored to understand the methods and techniques used by the researcher in solving the research work in a scientific and valid manner. The investigation strategy and methodology of the study are covered in this chapter. It includes the following features of research procedures –

- Method
- Population of the study
- Sample of the study
- Tools used
- Data collection procedure
- Data analysis of the study

3.2. Research Design

The research design represents the blueprint or structure of the process of research conducted. It constitutes the elements involved from framing the hypotheses and data collection to analysis of data etc. to validate the purpose of carrying out the research and to fulfill the aims and objectives of the study. According to Singh, Y. K.

(2006), research design is a mapping strategy containing the object of inquiry and the strategies for collecting evidences, analyzing and reporting the findings.

The research design in the present study was carried out by following the important steps in research process. It is presented in flow chart to have a clear understanding of how the present research was carried out in a logical manner.

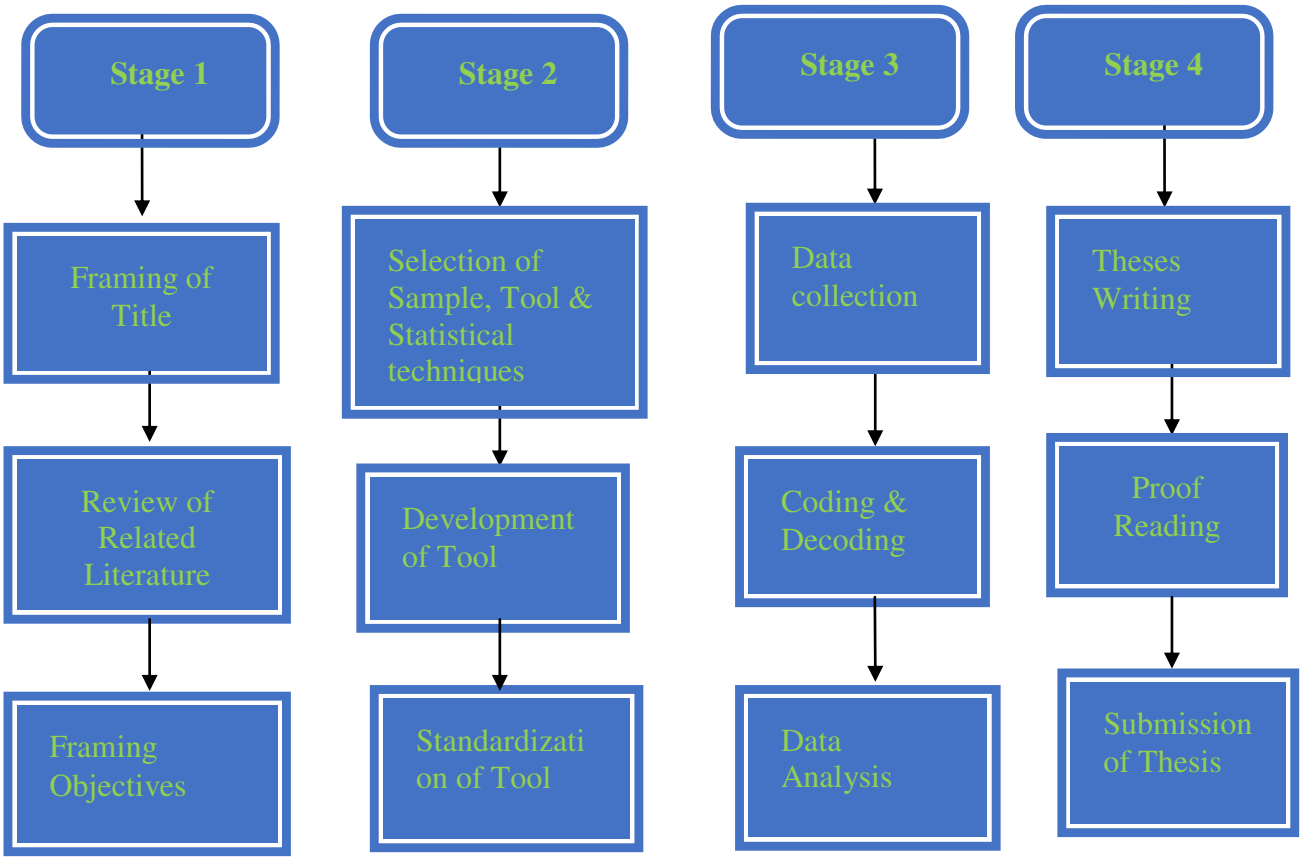

Fig 3.1: Flow chart of the stages of research process

3.3. Method of the Study

A descriptive survey method was adopted in the present study to gain familiarity of what exists at present and describe the characteristics of the sample population. It deals with establishing relationships between variables, formulating and testing the hypotheses and generalization of results (Best & Kahn, 2010). The descriptive survey research method was found to be most suitable in the present study as it fulfilled the criteria of a proper scientific research. Through quantitative approach the data collected through survey was generated in quantitative form to analyze and test the hypotheses of the study.

3.4. Population of the Study

In research population is a well-defined small portion of the universe (Sansanwal, D. N., 2020). It characterizes a certain group of individuals, objects or elements that has specific features that draws the attention of the researcher in studying them. A population consists of an accumulation of any specific groups or individuals representing similar characteristics in their interests and values that is undertaken for research study. For example, in the present context the population consists of all B.Ed. student teachers who are studying in B.Ed. colleges of Nagaland affiliated to Nagaland University.

Table 3.1: List of B.Ed. Colleges, Intake capacity, and number of Second Year student teachers, Nagaland

Sl.No	Name of the College	Intake capacity	Second year student teachers
1	State College of Teacher Education, Kohima (Government College),Nagaland	50	47
2	Modern Institute of Teacher Education, Kohima, Nagaland	100	96
3	Sazolie, College of Teacher Education, Kohima, Nagaland	50	48
4	Bosco College of Teacher Education, Dimapur, Nagaland	100	98
5	Unity College of Teacher Education, Dimapur, Nagaland	100	98
6	Salt Christian College of Teacher Education, Dimapur, Nagaland	100	95
7	Mokokchung College of Teacher Education, Mokokchung (Government), Nagaland	50	49
8	Mount MaryCollege, Chumukedima, Dimapur, Nagaland	100	98
	Total	**650**	**629**

(Source:https://nagalanduniversity.ac.in/English/admissions/2021/BED_prospectus.pdf https://nagalanduniversity.ac.in/English/results/B.ED_RESULT_GAZETTE2023.pdf)

3.5. Sample of the Study

A sample consists of the subset of the population that is drawn carefully to represent the characteristics of the research study. In scientific research study the sample are selected carefully by employing certain technique to draw inferences representing the target population under study. By obtaining a manageable sample

size pertaining to limited resources and time the attributes of the population are reflected in the sample. The representative sample helps the researcher to collect data efficiently within the stipulated time frame and aids in generalizing the larger population undertaken for research study.

The present study adopted random sampling technique as the population of the research is homogeneous and not widely spread. The list of all B.Ed. institutes and intake capacity in Nagaland was listed out to draw the sample. Out of the total 629 student teachers, the sample constituted 560 student teachers who were studying in their Second Year enrolled for the academic session 2021- 2023. The sample of the study constituted about 90% of the total population. The sample for the present study was selected through a simple random sampling technique.

3.6. Tools Used

The following tools were used for collecting the required data:

1. General Teaching Competence Scale developed and standardized by Vimal & Kishor (2020) was utilized and revalidated by the researcher.
2. Digital Literacy Questionnaire (DLQ) developed and standardized by Singh & Sheojee (2019) was utilized and revalidated by the researcher.
3. Leadership Skills Scale (LSS) developed and standardized by the researcher.
4. Academic Achievement was measured on the basis of marks obtained by Second Year (3^{rd} semester) B.Ed. student teachers in their respective pedagogy of school subject enrolled for academic session (2021-2023).

3.6.1. General Teaching Competence Scale

Description of the Tool

The General Teaching Competence Scale consists of 35 items with 8 dimensions viz. Planning lessons; Classroom management; Knowledge of subject; Interpersonal relationships; Development of teaching learning material; Time management; Evaluation process during teaching learning; and Competencies related to working with parents, community and other agencies. The tool is based on 5-point scale containing (Not at all, Sometimes, Rarely, Often, Most of the time) to respond the survey. The scale was administered on a sample of 100 government secondary school teachers teaching in secondary and senior secondary schools.

Table 3.2: Dimensions and Description of the tool

Sl.No	Dimension of the Tool	Description
1	Planning lessons	It relates to the ability of teacher to organize classes with the lesson objectives in mind, as well as to plan and direct creative activities that captivate students' attention and promote learning.
2	Classroom management	It is the ability of the teacher to control the classroom climate by offering a variety of educational activities.
3	Knowledge of subject	It refers to teachers' mastery of the subject, appropriate choice of material to teach, knowledge of the students' ages etc. to promote learning.
4	Interpersonal relationships	It is the teacher's ability to build strong and positive relationships with both students and co-workers.
5	Development of teaching learning material	The ability of the instructor to create engaging lesson plans and creative teaching methods, such as creating worksheets.
6	Time management	The ability of teacher to effectively manage time while providing information to pupils.
7	Evaluation process during teaching learning	The ability to use variety of evaluation techniques to provide remedial measures in learning.
8	Competencies related to working with parents, community and other agencies	It refers to teachers' ability to interact with various agencies involved in teaching learning process.

[Source: Vimal & Kishor (2020)]

Table 3.3: Teaching Competence Dimension wise items

Sl.No	Dimensions	No. of Positive items	No. of Negative items	Serial number of items in the scale	No. of items
1	Planning Lesson	4	0	1,2,3,7	4
2	Classroom management	8	0	8,10,11,22,26,27,31,35	8
3	Knowledge of subject	3	0	4,6,23	3
4	Interpersonal relationship	2	0	12,21	2
5	Developing of teaching learning material	5	0	5,9,32,33,34	5
6	Time management	2	0	20,29	2
7	Evaluation process during teaching learning	6	0	13,14,15,25,28,30	6
8	Competencies related to working with parents, community and other agencies	5	0	16,17,18,19,24	5
	Total	35	0		35

[Source: Vimal & Kishor (2020)]

Item analysis

The t-values for each item was computed considering 27% of the high scores and 27% of the low scores, the middle 46% slot were weeded out. Item to total correlation was also worked out to check internal consistency of the scale with coefficient values ranging from 0.000 to 0.626 and only 35 items were significant and the rest 22 items were not showing significant difference. Thus, the final scale contained 35 items and contained only positive statements (Vimal & Kishor, 2020)

Scoring procedure

The scale was rated on five point basis where responses for 'Most of the time' was scored 5; 'Often' was scored 4; 'Rarely' was scored 3; 'Sometimes' was scored 2; and 'Not at all' was scored 1 in the scale.

Validity

Content validity of the scale was established based on subject expert opinion, feedback and suggestions.

Reliability

The reliability of the tool was established through Test-retest and Internal consistency reliability after administering on 100 secondary school teachers. The reliability index was found to be 0.95 indicating that the tool is reliable to measure the competencies of teachers. The internal consistency also revealed a high Cronbach's Alpha value of 0.90 indicating a good fit of the test.

For the context of Nagaland State, the tool was revalidated by the researcher and the Cronbach's Alpha value was found to be 0.917, Guttman Split-Half Coefficient was found to be 0.901, and Spearman-Brown Coefficient was found to be 0.901 indicating a good fit of the test.

Interpretation of Scores

Table 3.4: Norms for interpretation of scores on Teaching Competence Scale for student teachers

Sl.No	Range of Scores	Level
1	162 -175	Very High Teaching Competence
2	151-161	High Teaching Competence
3	138-150	Average Teaching Competence
4	119-137	Low Teaching Competence
5	101-118	Very Low Teaching Competence

[Source: Vimal & Kishor (2020)]

3.6.2. Digital Literacy Questionnaire

Description of the Tool

The Digital Literacy Questionnaire designed for prospective teachers contained 39 items with 5 dimensions – participation and understanding of digital practices; access and integrate information; critically evaluate information, online interaction and online tools; manage and communicate information; collaborate and share digital content. The questionnaire was administered on a sample of 125 prospective teachers (Singh & Sheojee, 2019).

Table 3.5: Dimensions and Description of the tool

Sl.No	Dimension of the Tool
1	Participation and understanding of digital practices
2	Access and integrate information
3	Critically evaluate information, online interaction and online tools
4	Manage and communicate information
5	Collaborate and share digital content

[Source: Singh & Sheojee (2019)]

Table 3.6: Digital Literacy Dimension wise items

Sl.No	Name of the Dimensions	Dimensions	Question numbers of items in each category	Total
1	Participation and understanding of digital practices	A	3,4,5,8,9,10,12,13,14,15, 16	11
2	Access and integrate information	B	17,20,21,22,23,24,26,28, 29,30,32	11
3	Critically evaluate information, online interaction and online tools	C	33,34,36,37,38	05
4	Manage and communicate information	D	39,40,41,43,44,45,46	07
5	Collaborate and share digital content	E	48,49,51,52,53	05
Total Items				**39**

[Source: Singh & Sheojee (2019)]

Item analysis

Item analysis was done through Pearson Chi-square for the higher (27%) and lower (27%) group. The alpha-value of the items which were found to be significant at 0.05 and 0.01 level were retained in the final scale with 39 items.

Scoring procedure

The response of the items was based on dichotomous choices. A score of 1 was assigned for Yes and 0 for No responses.

Validity

Content validity was established by subject experts and their feedback was analyzed for each item.

Reliability

KR-20 formula was employed to establish the reliability coefficient. The calculated value of KR-20 was found to be 0.85 which is reliable to use the test.

For the context of Nagaland State, the tool was revalidated by the researcher and the Cronbach's Alpha value was found to be 0.879, Guttman Split-Half Coefficient was found to be 0.803, and Spearman-Brown Coefficient was found to be 0.810 indicating a good fit of the test.

Interpretation of Scores

The maximum and minimum scores of the questionnaire were 39 and 0 and the score ranges between 0 - 39. The Norms for interpretation of the level of Digital Literacy have been developed on the basis of obtained statistical result (Mean ± S.D., i.e. 28.03 ± 7.383).

Table 3.7: Norms for interpretation of scores on Digital Literacy for student teachers

Sl.No	Range of Scores	Level
1	19 & Below	Below Average
2	20 - 35	Average
3	36 & Above	Above Average

3.6.3. Leadership Skills Scale

Description of the tool

The tool was constructed by the investigator along with the Supervisor to assess the leadership skills of B.Ed. student teachers. The dimensions of the leadership skills were framed by considering the base of the REACH model as it 'specifies action or behaviors of teacher leaders in educational setting' (Meredith, 2006).

The purpose of development of the tool was to fill the gap in literature as very few scales are available in measuring leadership skills of student teachers/ pre-service teachers. It will help educators to comprehend how leaders take charge and shape the organisation mostly seen in business, management, industry, and organisation.

Construction & Validation of the of the Leadership Skills Scale

i) Initial Item Generation and Reduction

In this phase, the researcher carefully studied the articles, e-journals, research publications, Ph.D. thesis, M.Ed. Dissertations and newspapers article related to Leadership Skills**.** The researcher also identified the components of **'REACH Model of Leadership'** (Merideth, E. M., 2006) and prepared 51 items from Risk-taking, Effectiveness, Autonomy, Collegiality, and Honor covering the content of the tools, namely '**Leadership Skills Scale'**.

Table 3.8: Dimensions-wise and Serial-wise Items Distribution of Leadership Skills Scale (First draft)

Sl.No	Dimensions	Nature of items	No. of Items	Total No. of items	Total
1	Risk-taking	Positive	1, 2, 3, 5, 6, 7, 8, 10	8	
		Negative	4, 9	2	10
2	Effectiveness	Positive	11, 13, 14, 15, 16, 18, 19, 20	8	
		Negative	12, 17	2	10
3	Autonomy	Positive	21, 22, 23, 24, 25, 26, 28	7	
		Negative	27, 29	2	9
4	Collegiality	Positive	30, 31, 32, 34, 35, 37, 39, 40, 41	9	
		Negative	33, 36, 38	3	12
5	Honor	Positive	42, 44, 45, 46, 47, 48, 49	7	
		Negative	43, 50, 51	3	10
Total					**51**

ii) Item Refinement

In this phase, the researcher carefully compiled the first draft of the tool. Some of the items were reconstructed and restructured to better reflect the patterns of engagement in Leadership Skills as per available literature. The initial 51 items were scaled down to 38 items where 36 items were restructured as per suggestions from 30 expert's professors across various universities in India. Based on expert's suggestion the dimension 'Honor' was bifurcated into two categories – 'Ethics' and 'Vision'. The researcher conducted a pilot study where

500 student teachers participated in this pilot study. This was helpful in revealing the discrepancies of the tool.

Table 3.9: Dimensions-wise and Serial-wise Items Distribution of Leadership Skills Scale (Second draft)

Sl.No	Dimensions	Nature of items	No. of Items	Total No. of items	Total
1	Risk-taking	Positive	1,2,3,4,5,7	6	
		Negative	6	1	7
2	Effectiveness	Positive	8,10,13	3	
		Negative	9,11,12,14	4	7
3	Autonomy	Positive	15,17,18,19	4	
		Negative	16,20	2	6
4	Collegiality	Positive	21,24,26,27	4	
		Negative	22,23,25,28	4	8
5	Ethics	Positive	29,31,32	3	
		Negative	30,33,34	3	6
6	Vision	Positive	35,36,37	3	
		Negative	38	1	4
Total					**38**

iii) Item Purification

In this phase, the researcher with great care and precision carefully carried out the item purification process and computed Cronbach's Alpha Value.

Table 3.10: Cronbach's Alpha Value before the item analysis of Leadership Skills Scale

Cronbach's Alpha	Number of Items	Sample Size
0.829	**38**	**500**

The above table 3.10 shows that Cronbach's Alpha Value is 0.829 which indicates good level of internal consistency of the tool. There is no thumb rule to define whether reliability value is good or poor. 'But values of 0.70 or 0.80 are generally viewed as sufficient for research' (Furr, R. M., 2011).

Table 3.11: Item wise Analysis: Leadership Skills Scale

Item Number	Scale Mean if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Items wise Remark	Final Scale Sequence
Item-01	141.14	.305	.826	Retained	Item-01
Item-02	141.13	.478	.821	Retained	Item-02
Item-03	141.37	.332	.825	Retained	Item-03
Item-04	140.64	.507	.821	Retained	Item-04
Item-05	140.45	.363	.824	Retained	Item-05
Item-06	**142.03**	**.189**	**.830**	**Rejected**	---------
Item-07	140.34	.403	.823	Retained	Item-06
Item-08	139.85	.289	.827	Retained	Item-07
Item-09	140.88	.288	.826	Retained	Item-08
Item-10	140.23	.208	.828	Retained	Item-09
Item-11	141.25	.238	.828	Retained	Item-10
Item-12	141.26	.293	.826	Retained	Item-11
Item-13	141.29	.238	.828	Retained	Item-12
Item-14	141.11	.258	.827	Retained	Item-13
Item-15	140.90	.343	.824	Retained	Item-14
Item-16	**141.50**	**-.078**	**.838**	**Rejected**	---------
Item-17	141.03	.365	.824	Retained	Item-15
Item-18	140.79	.450	.822	Retained	Item-16
Item-19	140.37	.432	.822	Retained	Item-17
Item-20	140.46	.392	.823	Retained	Item-18
Item-21	140.48	.232	.828	Retained	Item-19
Item-22	140.81	.220	.828	Retained	Item-20
Item-23	140.43	.285	.826	Retained	Item-21
Item-24	**140.15**	**.121**	**.831**	**Rejected**	----------
Item-25	141.21	.305	.826	Retained	Item-22
Item-26	140.22	.244	.827	Retained	Item-23
Item-27	141.08	.435	.822	Retained	Item-24
Item-28	141.36	.204	.828	Retained	Item-25
Item-29	140.70	.305	.826	Retained	Item-26
Item-30	140.88	.355	.824	Retained	Item-27
Item-31	140.22	.356	.825	Retained	Item-28
Item-32	139.90	.338	.826	Retained	Item-29
Item-33	140.56	.348	.824	Retained	Item-30
Item-34	140.84	.307	.826	Retained	Item-31
Item-35	141.26	.392	.823	Retained	Item-32
Item-36	141.13	.363	.824	Retained	Item-33

Item-37	140.64	.431	.822	Retained	Item-34
Item-38	141.00	.370	.824	Retained	Item-35

The above table 3.11 shows that the value of Cronbach's Alpha's value if deleted a particular item from the scale. The three item statements 06, 16, and 24 values in the column of Cronbach's alpha if item deleted are more than the existing Cronbach's value of 0.829. Therefore, the researcher felt the need to remove those statements. After finalizing the item analysis strategies, the researcher prepared the final draft of the tool. In 38 items, the researcher rejected 3 items and selected 35 items for the final draft of the tool. Therefore, the final draft of the tool consisted of thirty-five (35) items on a five-point scale.

Table 3.12: Cronbach's Alpha Value after the item analysis of Leadership Skills Scale

Reliability	Value	Number of Items
Cronbach's Alpha	**0.833**	35
Split-Half	**0.731**	

The above table 3.12 shows that Cronbach's Alpha Value is 0.833, which indicates a good level of internal consistency of the tool after attempting the item analysis. The Spearman-Brown Coefficient value of the Leadership Skills Scale is 0.731. Thus, the reliability of the tool was established by the two types of reliability analysis.

iv) Construct validation

The items were reviewed by experts to check the content validity. Content validation was carried out through subjective methods by asking experts to judge the relevance and representativeness of the test items with regard to the domain being assessed i.e. Leadership Skills. As per their suggestions further improvement was done and necessary changes were made accordingly. Sorting of the item was done after removing excess items, double barreled statements, repeated items, and reconstructing new items for the underrepresented category. The dimension of 'Honor' from the base of REACH model was bifurcated into two new dimensions 'Ethics' and 'Vision'.

In the final draft all necessary modification was carried out and the initial items were reconstructed by the researcher to better reflect the patterns of Leadership Skills Scale. The researcher further attempted the factor analysis to combine the factors from the variables. Thus, the Leadership Skills Scale has ensured both the content validity and construct validity.

v) Final Tool / Scoring Procedure

All favorable statements were awarded from a maximum score of five to a minimum score of one to each categorization. The final tool consists of 35 items. The final dimension-wise and serial-wise distribution of the scale is described below in Table 3.13.

Table 3.13: Final Dimensions-wise and Serial-wise Items Distribution of Leadership Skills Scale

Sl.No	Dimensions	Nature of items	No. of Items	Total No. of items	Total
1	Risk-taking	Positive	1,2,3,4,5,6	6	6
		Negative	__	__	
2	Effectiveness	Positive	7,9,12	3	7
		Negative	8,10,11,13	4	
3	Autonomy	Positive	14,15,16,17	4	5
		Negative	18	1	
4	Collegiality	Positive	19,23,24	3	7
		Negative	20,21,22,25	4	
5	Ethics	Positive	26,28,29	3	6
		Negative	27,30,31	3	
6	Vision	Positive	32,33,34	3	4
		Negative	35	1	
		Total			**35**

Table 3.14: Scoring Procedure

Response	Always	Often	Sometimes	Rarely	Never
Positive	**5**	**4**	**3**	**2**	**1**
Negative	**1**	**2**	**3**	**4**	**5**

There are 35 questions in total and each question was given with five possible responses ranging from **Always** to **Never** and scoring key ranging from 5 to 1 for positive statements and 1 to 5 for negative statements. The scale has 22 positive items and 13 negative items.

The range of raw scores for Leadership Skills Scale will have maximum scores of 175 and minimum scores of 35.

Statistical Results

The scale for the purpose of standardization was administered on 500 samples of student teachers across B.Ed. colleges in Nagaland. On the basis of the scores obtained for the 500 student teachers the statistical results obtained are provided in Table 3.15.

Table 3.15: Statistical Results

Mean	SD	N
132.75	**12.495**	**500**

Norms

The z-Score Norms for interpretation of the level of Leadership Skills have been presented in Table 3.16 on the basis of the statistical results obtained from Table 3.15. The Norms for the interpretation of the level of Leadership Skills is given in Table 3.17.

Table 3.16: Z -Score Norms for Leadership Skills

Raw Score	Z Score	Raw Score	Z Score	Raw Score	Z Score	Raw Score	Z Score
101	-2.5410	120	-1.0204	136	0.2601	152	1.5406
103	-2.3809	121	-0.9403	137	0.3401	153	1.6206
105	-2.2208	122	-0.8603	138	0.4201	154	1.7006
106	-2.1408	123	-0.7803	139	0.5002	155	1.7807
108	-1.9807	124	-0.7002	140	0.5802	156	1.8607
109	-1.9007	125	-0.6202	141	0.6602	157	1.9407
110	-1.8207	126	-0.5402	142	0.7402	158	2.0208
111	-1.7406	127	-0.4601	143	0.8203	159	2.1008
112	-1.6606	128	-0.3801	144	0.9003	160	2.1808
113	-1.5806	129	-0.3001	145	0.9803	161	2.2609
114	-1.5006	130	-0.2200	146	1.0604	164	2.5010
115	-1.4205	131	-0.1400	147	1.1404	166	2.6610
116	-1.3405	132	-0.0600	148	1.2204	170	2.9811

117	-1.2605	133	0.0200	149	1.3005		
118	-1.1804	134	0.1000	150	1.3805		
119	-1.1004	135	0.1800	151	1.4605		

Table 3.17: Norms for interpretation of the level of Leadership Skills

Z -Score Range	Raw Score Range	Level
-1.1004 – -2.5410	119 & Below	Below Average Level
-1.0204 – 0.9803	120 -145	Average Level
1.0604 – 2.9811	146 & Above	Above Average Level

3.6.4. Academic Achievement

In the present study academic achievement was indicated on the basis of the marks obtained by Second Year (3rd semester) B.Ed. student teachers in their respective pedagogy of school subject. The Academic Achievement scores of the Second Year (3rd semester examination) were retrieved from Result Gazette Nagaland University which was published on 11th August 2023 via. Notification NO. NU/ EX/ B.ED/ PROF-4/ 2022- 191. The detail course content for the pedagogy of each school subjects for student teachers are provided in table 3.18:

Table 3.18: Course content for the pedagogy of each school subjects

Course Code	Title of the paper	No. of Units	External	Internal	Total marks
Course 7a	Pedagogy of a School Subject (any one)				
	i) Language (English)	5	70	30	100
	ii) Social Sciences	5	70	30	100
	iii) Science	5	70	30	100
	iv) Mathematics	5	70	30	100

Interpretation of Scores

The maximum and minimum scores of academic achievement were 100 and 0. The Norms for interpretation of the level of academic achievement have been developed on the basis of obtained academic achievement of student teachers scores (Mean ± S.D., i.e. 65.01 ± 9.745).

Table 3.19: Norms for interpretation of scores on Academic Achievement for student teachers

Sl.No	Range of Scores	Level
1	54 & Below	Below Average
2	55 - 75	Average
3	76 & Above	Above Average

3.7. Collection of Data

Data collection procedure in the study was done through primary and secondary data.

Primary data

The primary data was collected after consulting the head of institution in all the 8 B.Ed. colleges in Nagaland and prior consent was given to the researcher to gather the data. The total number of B.Ed. institutes in Nagaland is 8 where 2 institutes are managed by government and 6 institutes are managed by private entity. The data administration was done through face to face or offline mode during the working hours of the colleges. During the process each respondents were informed about the purpose of the study and a clear instructions was given on the nature of the questionnaire to acquire accurate data. To ensure maximum cooperation from the respondents the investigator made clear that all information of the data will be kept confidential and will be utilized solely for the present research. The data collection was done during working hours of the college and took about 40 minutes to complete each session.

The questionnaire consists of two section – Section-A consisting the Personal data sheet of the respondents; Section-B consists of Answer sheet for the three tools viz. Leadership Skills Scale, General Teaching Competence Scale, and Digital Literacy Questionnaire to determine the objectives of the study. A total of 560 student-teachers responded to the standardized questionnaire.

The Academic Achievement scores of the Second Year (3^{rd} semester examination) were retrieved from Result Gazette Nagaland University which was published on 11^{th} August 2023 via. Notification NO. NU/ EX/ B.ED/ PROF-4/ 2022-191. The marks of each respondents were compiled and tabulated in excel sheet.

All the response of answer sheet were compiled and the raw scores obtained were tabulated in excel sheet. The coding procedure was carried out based on the scoring procedure provided in the manual of the tools.

Secondary data

The secondary sources of data were gathered from electronic media, books, journals, periodicals, master dissertation, doctoral dissertation, e-books, and Government of India documents.

3.8. Data Analysis of the Study

The data were analyzed by the investigator with the help of descriptive statistics and inferential statistics. The descriptive statistical techniques like mean, median, standard deviation, percentage, skewness and kurtosis were used to analyze the data.

Inferential statistics like independent samples t-test, F- test, Pearson Product Moment correlation, Multiple Correlation had been used during data analysis. For appropriate statistical analysis of the data was analyzed using IBM SPSS version 22.

The following statistical procedures were followed in the analysis of the present study:

1. Descriptive statistics was used to describe the characteristics or features of sample in terms of the variables taken for the study.

2. Independent Samples t-Test was used to find the significance of the difference between two categories (Gender, and Age) with respect to the Teaching Competence, Digital Literacy, leadership skills and Academic Achievement.

3. 'F'- Test was used to find out the significant difference among Teaching Competence, Digital Literacy, leadership skills and Academic Achievement of student teachers in terms of Education Qualification and Pedagogy.

4. Correlation was used to determine the any significant relationship among (i) Teaching Competence, (ii) Digital Literacy, (iii) leadership skills and (iv) Academic Achievement of student teachers.

5. Multiple Correlation was used to determine whether there is any significant joint contribution of digital literacy, leadership skills and academic achievement on teaching competence.

CHAPTER - IV
ANALYSIS AND INTERPRETATION OF THE DATA

4.1. Introduction

In the previous chapter, the investigator had explained the methodology, research design, population, and sample of the investigation, standardization procedure for tool, data collection procedure and statistical analysis done in the present study. In this chapter, the investigator presents an analysis and interpretation of the data for the study. For the analysis and interpretation process, appropriate statistical techniques were used. The IBM SPSS-22 version software was applied to the present study for data analysis.

4.2. Data Analysis and Interpretation of the Study

The data were analyzed by the investigator with the help of descriptive statistics and inferential statistics. The descriptive statistical techniques like mean, standard deviation, percentages, and inferential statistics like independent samples t-test, F- test, Pearson Product Moment correlation, Multiple Correlation had been used during data analysis. For appropriate statistical analysis the data was analyzed using IBM SPSS version 22.

The following are the statistical procedure followed in the analysis of the present study:

1. Descriptive statistics was used to describe the characteristics or features of sample in terms of the variables taken for the study.

2. Independent Samples t-Test was used to find the significance of the difference between two categories (Gender, and Age) with respect to the Teaching Competence, Digital Literacy, Leadership Skills and Academic Achievement.

3. 'F'- Test was used to find out the significant difference among Teaching Competence, Digital Literacy, Leadership Skills and Academic Achievement of student teachers in terms of Education Qualification and Pedagogy.

4. Correlation was used to determine the any significant relationship among (i) Teaching Competence, (ii) Digital Literacy, (iii) leadership skills and (iv) Academic Achievement of student teachers.

5. Multiple Correlation was used to determine whether there is any significant joint contribution of digital literacy, leadership skills and academic achievement on teaching competence.

In the analysis of the present study, p values equal to or below 0.05 are significant at 0.05 level of significance, and p values equal to or below 0.01 are significant at 0.01 level of significance were denoted as a significance p-value. Table t- value for 558 df at 0.05 level is 1.96, @ indicates not significant at 0.05 level; *indicates significant at 0.05 level, Table F- value for df (2, 557) at 0.05 level is 3.087, Table F-value for df (3, 556) at 0.05 level is 2.696.

The investigator converted all the framed hypotheses into null hypotheses for statistical analysis.

The analysis and interpretation of data is presented in the following sections –

Section 4.2.1: Demographic profile;

Section 4.2.2: Descriptive Analysis;

Section 4.2.3: Inferential Analysis; and

Section 4.2.4: Correlation Analysis

Section 4.2.1: Demographic Profile

The demographic characteristics of the sample such as gender, age, educational qualification, and pedagogy are described in the form of frequency and percentage.

Table: 4.1: Demographic profile of the sample

Demographic Profile	Frequency	Percentage
Gender		
Male	131	23.4%
Female	429	76.6%
Total	**560**	**100%**
Age		
Below 30 years	500	89.3%
30 years and above	60	10.7%
Total	**560**	**100%**
Educational Qualification		
U.G	200	35.7%

P.G	320	57.1%
Others	40	7.1%
Total	**560**	**100%**
Pedagogy		
Pedagogy of English	157	28.0%
Pedagogy of Mathematics	56	10.0%
Pedagogy of Science	89	15.9%
Pedagogy of Social Studies	258	46.1%
Total	**560**	**100%**

Table 4.1 describes the demographic profile of the sample. The total number of student teachers for gender is 560 where 131 were male and 429 were female corresponding to a percentage of 23.4% for male and 76.6% for female respectively. With regard to age out of the total sample of 560 below 30 years are 500 and 30 years above are 60 with a percentage of 89.3% and 10.7% respectively. The Educational qualification variable constituted a total sample of 560 where 200 are U.G, 320 are P.G and 40 are others with a percentage of 35.7%, 57.1% and 7.1% respectively. The total sample for student teachers opted pedagogy is 560 where 157 student teachers are from Pedagogy of English with 28.0 %, 56 student teachers are from Pedagogy of Mathematics with 10.0%, 89 student teachers are from Pedagogy of Science with 15.9% and 258 student teachers are from Pedagogy of Social Studies with a percentage score of 46.1%.

Section 4.2.2: Descriptive Analysis

Teaching Competence

Objective-1: To determine the level of Teaching Competence of student teachers.

In this section the total scores of the variable teaching competence were analyzed through descriptive statistics. The descriptive statistics of teaching competence are presented in Table 4.2 to check the normality of distribution with the help of mean, median, standard deviation, skewness, kurtosis and range.

Table 4.2: Descriptive Statistics Results of Teaching Competence

Statistics	Value
N	560
Mean	143.74

Median	146.00
Mode	153
Standard Deviation	17.591
Variance	309.460
Skewness	-0.959
Kurtosis	1.295
Range	106
Minimum	69
Maximum	175

In Table 4.2 the mean, median and mode values of teaching competence for the total sample was 143.74, 146.00 and 153 which are closely situated towards the normal distribution (Figure 4.1). The standard deviation value is 17.59. The values of skewness and kurtosis are -0.959 and 1.29 showing that distributions are negatively skewed and platykurtic in nature. The value of range was 106 showing the difference between the minimum (69) and maximum (175) score of teaching competence.

Table 4.3: Percentage Analysis of the Level of Teaching Competence

Sl.No	Range of Scores	Frequency	Percentage	Level
1	162 -175	80	14.29%	Very High Teaching Competence
2	151-161	141	25.18%	High Teaching Competence
3	138-150	165	29.46%	Average Teaching Competence
4	119-137	123	21.96%	Low Teaching Competence
5	118 & below	51	9.11%	Very Low Teaching Competence
Total		**560**	**100%**	

The above table 4.3 presents the percentage analysis of the sample in terms of the level of student teachers teaching competence. As seen from the above table, 80 (14.29%) of the student teachers has a 'Very High Teaching Competence' level, 141 (25.18%) of the student teachers has a 'High Teaching Competence' level, 165(29.46%) of the student teachers has an 'Average Teaching Competence' level, 123 (21.96%) of the student teachers has a 'Low Teaching Competence' level, and 51(9.11%) of the student teachers has 'Very Low Teaching Competence' level.

Overall, 68.93% of student teachers has average and above level of Teaching Competence.

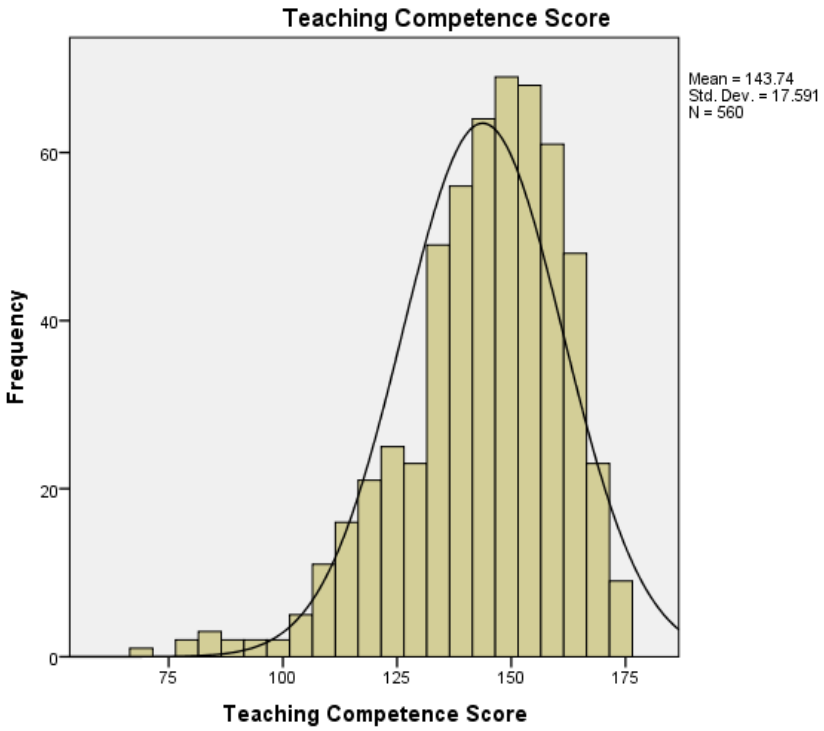

Figure 4.1: Graphical representation of total score of Teaching Competence

Digital Literacy

Objective-2: To determine the level of Digital Literacy of student teachers.

The descriptive statistics of digital literacy score are presented in Table 4.4 to check the normality of distribution with the help of mean, median, standard deviation, skewness, kurtosis, and range.

Table 4.4: Descriptive Statistics Results of Digital Literacy

Statistics	Value
N	560
Mean	28.03
Median	29.00
Mode	39
Standard Deviation	7.383
Variance	54.511
Skewness	-0.398
Kurtosis	-0.576
Range	32
Minimum	7
Maximum	39

The mean, median, and mode values of digital literacy for the total sample were 28.03, 29.00 and 39 which are closely situated towards the normal distribution (Figure 4.2). The value of standard deviation was found to be 7.383. The values of skewness and kurtosis are -0.398 and -0.576 indicating that distributions are negatively skewed and platykurtic in nature. The value of range was found to be 32 indicating the difference between the minimum (7) and maximum (39) score of digital literacy.

Table 4.5: Percentage Analysis of the Level of Digital Literacy

Sl.No	Range of Scores	Frequency	Percentage	Level
1	19 & below	81	14.5%	Below Average
2	20 - 35	369	65.9%	Average
3	36 & above	110	19.6%	Above Average
Total		**560**	**100%**	

The above table 4.5 represents the percentage analysis of the sample in terms of the level of student teachers Digital Literacy. As seen from the above table, 81 (14.5%) of the student teachers has 'Below Average' digital literacy level, 369 (65.9%) of the student teachers has 'Average' digital literacy level, and 110 (19.6%) of the student teachers has 'Above Average' digital literacy level. Overall, 85.5% of student teachers has average and above level of digital literacy.

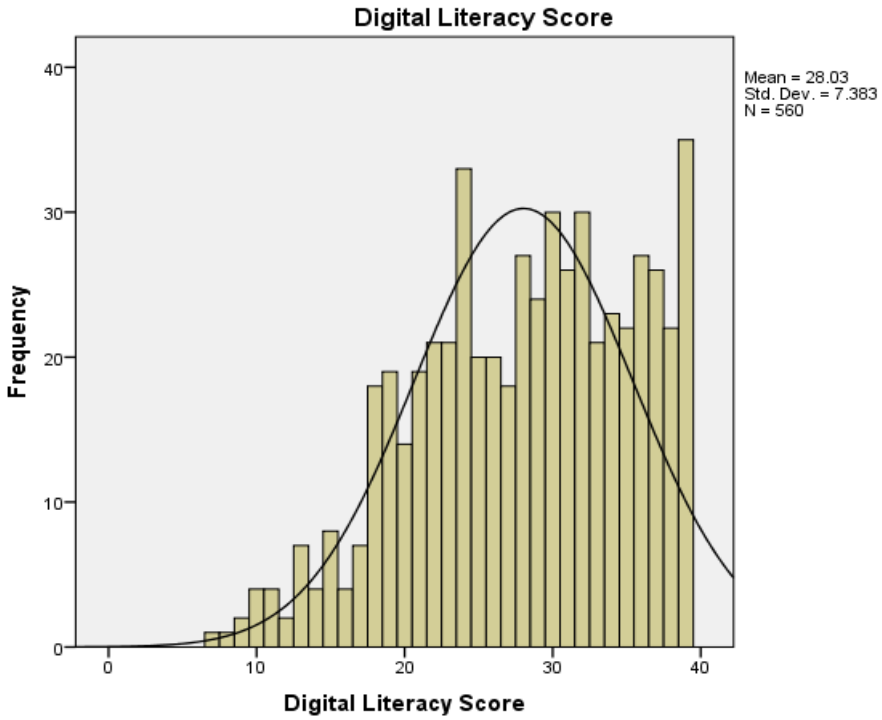

Figure 4:2 Graphical representation of total score of Digital Literacy

Leadership Skills

Objective-3: To determine the level of Leadership Skills of student teachers.

The descriptive statistics of leadership skills score are presented in Table 4.6 to check the normality of distribution with the help of mean, median, standard deviation, skewness, kurtosis, and range.

Table 4.6: Descriptive Statistics Results of Leadership Skills

Statistics	Value
N	560
Mean	132.64
Median	132.00
Mode	126
Standard Deviation	12.392
Variance	153.554
Skewness	0.132
Kurtosis	-0.381
Range	71
Minimum	99
Maximum	170

The Leadership skills score of student teachers in table 4.6 showed that data are normally distributed where the mean, median, and mode values were 132.64,

132.00, and 126 respectively (Figure 4.3). The standard deviation value was found to be 12.392. The skewness and kurtosis values are 0.132 and -0.381 respectively representing a positively skewed normal distribution curve and platykurtic in nature. The value of range was found to be 71 indicating the difference between the minimum (99) and maximum (170) score of digital literacy.

Table 4.7: Percentage Analysis of the Level of leadership Skills

Raw Score Range	Frequency	Percentage	Level
119 & below	91	16.25%	Below Average Level
120 -145	373	66.61%	Average Level
146 & above	96	17.14%	Above Average Level
Total	**560**	**100%**	

The above table 4.7 represents the percentage analysis of the sample in terms of the level of student teachers leadership skills. As seen from the above table, 91 (16.25%) of the student teachers has 'Below Average' leadership skills, 373 (66.61%) of the student teachers has 'Average' leadership skills, and 96 (17.14%) of the student teachers has 'Above Average' leadership skills level. Overall, 83.75% of student teachers has average and above level of leadership skills.

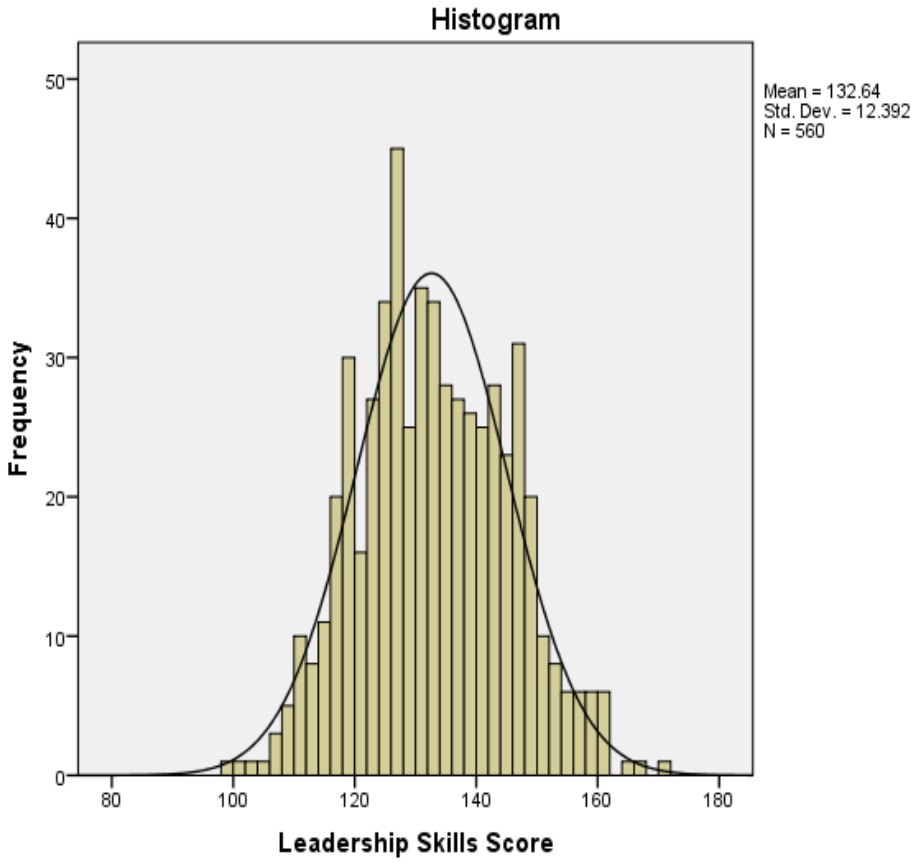

Figure 4.3: Graphical representation of total score of leadership skills

Academic Achievement

Objective-4: To determine the level of Academic Achievement of student teachers.

The descriptive statistics of academic achievement score are presented in Table 4.8 to check the normality of distribution with the help of mean, median, standard deviation, skewness, kurtosis, and range.

Table 4.8: Descriptive Statistics Results of Academic Achievement

Statistics	Value
N	560
Mean	65.01
Median	65.00
Mode	65
Std. Deviation	9.745
Variance	94.959
Skewness	-0.278
Kurtosis	0.253
Range	62
Minimum	27
Maximum	89

In Table 4.8 the mean, median and mode values of academic achievement for the total sample was 65.01, 65.00 and 65 which are closely situated towards the normal distribution (Figure 4.4). The standard deviation value is 9.745. The values of skewness and kurtosis are -0.278 and 0.253 showing that distributions are negatively skewed and platykurtic in nature. The value of range was 62 showing the difference between the minimum (27) and maximum (89) score of academic achievement.

Table 4.9: Percentage Analysis of the Level of Academic Achievement

Sl.No	Range of Scores	Frequency	Percentage	Level
1	54 & below	77	13.75%	Below Average
2	55 – 75	407	72.68%	Average
3	76 & above	76	13.57%	Above Average
		560	**100%**	

The above table 4.9 represents the percentage analysis of the sample in terms of the level of student teachers academic achievement. As seen from the above table, 77 (13.75%) of the student teachers has 'Below Average' academic achievement level, 407 (72.68%) of the student teachers has 'Average' academic achievement level, and 76 (13.57%) of the student teachers has 'Above Average' academic achievement level. Overall, 86.25% of student teachers has average and above level of academic achievement.

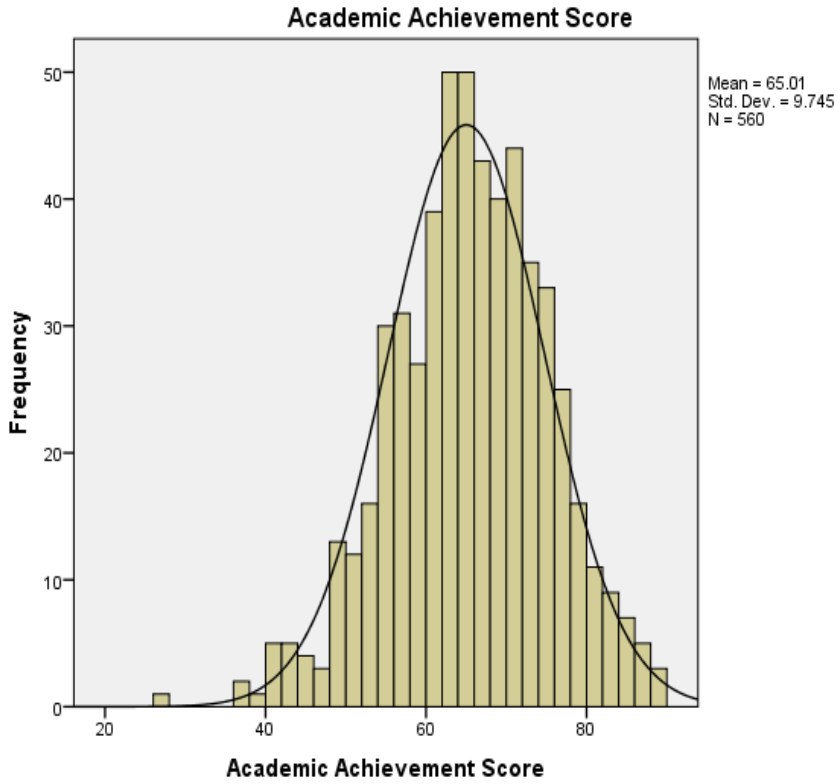

Figure 4.4: Graphical representation of total score of Academic Achievement

Section 4.2.3: Inferential Analysis

In this section the difference in the mean scores of teaching competence, leadership skills, digital literacy, and academic achievement are obtained to find out if any difference exists with respect to various demographic variables. With the help of t-test and ANOVA the hypotheses were tested to find out the difference between the means of the groups.

Teaching competence and its demographic variables (Gender and Age)

Objective-5: To compare mean scores of student teachers teaching competence with respect to gender.

Hypothesis-01: There is no significant difference in the mean scores of teaching competence between the groups of student teachers in terms of gender.

Table 4.10: t-test results of comparison of gender scores of teaching competence

Variable and its Dimensions	Gender	N	Mean	SD	t-value
Planning Lessons	Male	131	16.62	2.494	1.093@
	Female	429	16.91	2.715	
Classroom Management	Male	131	33.68	4.414	0.373@
	Female	429	33.85	4.575	
Knowledge of Subject	Male	131	11.05	2.188	1.123@
	Female	429	11.30	2.210	
Interpersonal Relationships	Male	131	7.91	1.643	1.463@
	Female	429	8.15	1.629	
Development of teaching learning material	Male	131	20.79	3.488	1.583@
	Female	429	21.29	3.058	
Time management	Male	131	8.37	1.531	1.032@
	Female	429	8.53	1.468	
Evaluation process during teaching learning	Male	131	23.46	3.602	0.824@
	Female	429	23.78	4.021	
Competencies related to working with parents, community and other agencies	Male	131	20.15	3.039	1.017@
	Female	429	20.45	3.053	
Teaching Competence	**Male**	**131**	**142.03**	**17.124**	**1.271@**
	Female	**429**	**144.26**	**17.719**	

Note: @ indicates not significant at 0.05 level

Table 4.10 showed the differences in the mean scores of teaching competence among student teachers in various dimensions with regard to gender. It can be seen from the table that no significant difference was found in the dimensions such as – Planning Lessons, Classroom Management, Knowledge of Subject, Interpersonal Relationships, Development of teaching learning material, Time management, Evaluation process during teaching learning, Competencies related to working with parents, community and other agencies among male and female student teachers as

the calculated t-values were found to be lesser than the table t-value (1.96) for 558 df at 0.05 level of significance.

Overall mean scores of 142.03 for male student teachers and 144.26 for female student teachers in their teaching competence. While comparing the mean scores of male and female student teachers, there was slight difference indicating that female student teachers have slight better in teaching competence than the male student teachers. It is clear from the given table that the calculated t-value (1.271) is less that the table t- value (1.96) for 558 df at 0.05 level of significance. Thus, the hypothesis statement "there is no significant difference in the mean scores of teaching competence between the groups of student teachers in terms of gender" stands accepted. Therefore, it is concluded there is no significant difference in the mean scores of teaching competence between the groups of student teachers in terms of gender.

Objective-6: To compare mean scores of student teachers teaching competence with respect to age.

Hypothesis-02: There is no significant difference in the mean scores of teaching competence between the groups of student teachers in terms of age.

Table 4.11: t-test results of comparison of age scores of teaching competence

Variable and its Dimensions	Age	N	Mean	SD	t-value
Planning Lessons	Below 30 years	500	16.83	2.685	
	30 years and above	60	16.90	2.522	0.181@
Classroom Management	Below 30 years	500	33.80	4.509	
	30 years and above	60	33.85	4.779	0.074@
Knowledge of Subject	Below 30 years	500	11.24	2.208	
	30 years and above	60	11.23	2.205	0.035@
Interpersonal Relationships	Below 30 years	500	8.07	1.644	
	30 years and above	60	8.23	1.555	0.713@
Development of teaching learning material	Below 30 years	500	21.16	3.165	
	30 years and above	60	21.28	3.216	0.275@
Time management	Below 30 years	500	8.51	1.464	
	30 years and above	60	8.33	1.643	0.872@
Evaluation process during teaching learning	Below 30 years	500	23.70	3.934	
	30 years and above	60	23.77	3.894	0.128@

Competencies related to working with parents, community and other agencies	Below 30 years	500	20.46	2.946	1.702@
	30 years and above	60	19.75	3.776	
Teaching Competence	**Below 30 years**	**500**	**143.79**	**17.452**	
	30 years and above	**60**	**143.35**	**18.863**	**0.181@**

Note: @ indicates not significant at 0.05 level

Table 4.11 showed the differences in the mean scores of teaching competence among student teachers in various dimensions with regard to age. It is evident from the table that no significant difference was found among student teachers of below 30 years and 30 years & above in the dimensions such as – Planning Lessons, Classroom Management, Knowledge of Subject, Interpersonal Relationships, Development of teaching learning material, Time management, Evaluation process during teaching learning, Competencies related to working with parents, community and other agencies, as the calculated t-values were found to be lesser than the table t-value (1.96) for 558 df at 0.05 level of significance.

Overall mean scores of student teachers teaching competence for below 30 years is 143.79 and 143.35 for 30 years and above. While comparing the mean scores for student teachers of below 30 years and 30 years & above, there was very slight difference indicating that student teachers of below 30 years have slightly better teaching competence than student teachers of 30 years and above. This is supplemented by the t-value (0.181) which is less than the table t-value (1.96) for 558 df at 0.05 level of significance. Thus, the hypothesis statement "there is no significant difference in the mean scores of teaching competence between the groups of student teachers in terms of age" stands accepted. Therefore, it is concluded there is no significant difference in the mean scores of teaching competence between the groups of student teachers in terms of age.

Digital literacy and its demographic variables (Gender and Age)

Objective-7: To compare mean scores of student teachers digital literacy with respect to gender.

Hypothesis-03: There is no significant difference in the mean scores of digital literacy between the groups of student teachers in terms of gender.

Table 4.12: t-test results of comparison of gender scores of digital literacy

Dimensions and its variables	Gender	N	Mean	SD	t-value
Participation and understanding of digital practices	Male	131	9.40	1.834	4.601*
	Female	429	8.50	1.984	
Access and integrate information	Male	131	8.08	2.624	3.947*
	Female	429	7.09	2.471	
Critically evaluate information, online interaction and online tools	Male	131	3.41	1.539	3.057*
	Female	429	2.91	1.681	
Manage and communicate information	Male	131	5.68	1.495	1.507@
	Female	429	5.44	1.615	
Collaborate and share digital content	Male	131	3.73	1.312	2.479*
	Female	429	3.40	1.375	
Digital Literacy	**Male**	**131**	**30.30**	**7.503**	**4.075***
	Female	**429**	**27.34**	**7.214**	

Note: @indicates not significant at 0.05 level; *indicates significant at 0.05 level

Table 4.12 showed the differences in the mean scores of digital literacy among student teachers in various dimensions with regard to gender. It is evident from the table that a significant difference was found among male and female student teachers in the dimensions such as – Participation and understanding of digital practices, Access and integrate information, Critically evaluate information, online interaction and online tools, Collaborate and share digital content, as the calculated t-values were found to be greater than the table t-value (1.96) for 558 df at 0.05 level of significance. However, one dimension of digital literacy viz. Manage and communicate information was found to be insignificant as the calculated t-value was found to be lesser than the table t-value (1.96) for 558 df at 0.05 level of significance.

Overall mean scores of digital literacy of student teachers mean value for male is 30.30 and 27.34 for female indicating that mean scores of male were more than female student teachers. It can be seen from the table that the overall t-value was found to be 4.075 which was greater than the table t-value 1.96 at 0.05 level of significance. Thus, the hypothesis statement "there is no significant difference in the mean scores of digital literacy between the groups of student teachers in terms of gender" stands rejected. Therefore, it is concluded there is a significant difference in

the mean scores of digital literacy between the groups of student teachers in terms of gender.

Objective-8: To compare mean scores of student teachers digital literacy with respect to age.

Hypothesis-04: There is no significant difference in the mean scores of digital literacy between the groups of student teachers in terms of age.

Table 4.13: t-test results of comparison of age scores of digital literacy

Dimension and its Variable	Age	N	Mean	SD	t-value
Participation and understanding of digital practices	Below 30 Years	500	8.66	1.951	1.679@
	30 years and above	60	9.12	2.225	
Access and integrate information	Below 30 Years	500	7.27	2.505	1.444@
	30 years and above	60	7.77	2.794	
Critically evaluate information, online interaction and online tools	Below 30 Years	500	2.99	1.665	1.680@
	30 years and above	60	3.37	1.605	
Manage and communicate information	Below 30 Years	500	5.46	1.604	1.568@
	30 years and above	60	5.80	1.436	
Collaborate and share digital content	Below 30 Years	500	3.44	1.369	1.552@
	30 years and above	60	3.73	1.326	
Digital Literacy	**Below 30 Years**	**500**	**27.82**	**7.273**	**1.953@**
	30 years and above	**60**	**29.78**	**8.099**	

Note: @indicates not significant at 0.05 level; *indicates significant at 0.05 level

Table 4.13 showed the differences in the mean scores of digital literacy among student teachers in various dimensions with regard to age. It is evident from the table that no significant difference was found among student teachers of below 30 years and 30 years & above in the dimensions such as – Participation and understanding of digital practices, Access and integrate information, Critically evaluate information, online interaction and online tools, Manage and communicate information, Collaborate and share digital content, as the calculated t-values were found to be lesser than the table t-value (1.96) for 558 df at 0.05 level of significance.

Overall mean scores of student teachers digital literacy for below 30 years is 27.82 and 29.78 for 30 years and above. While comparing the mean scores for student

teachers of below 30 years and 30 years & above, there was slight difference indicating that student teachers of 30 years & above have slightly better digital literacy than student teachers of below 30 years. Overall t-value was found to be 1.953 which is lower than the table t-value 1.96 for 558 df at 0.05 level of significance. Thus, the hypothesis statement "there is no significant difference in the mean scores of digital literacy between the groups of student teachers in terms of age" stands accepted. Therefore, it is concluded there is no significant difference in the mean scores of digital literacy between the groups of student teachers in terms of age.

Leadership Skills and its demographic variables (Gender and Age)

Objective-9: To compare mean scores of student teachers leadership skills with respect to gender.

Hypothesis-05: There is no significant difference in the mean scores of leadership skills between the groups of student teachers in terms of gender.

Table 4.14: t-test results of comparison of gender scores of leadership skills

Variable and its Dimensions	Profile	N	Mean	S.D.	t-value
Risk Taking	Male	131	21.41	3.045	2.405*
	Female	429	20.67	3.123	
Effectiveness	Male	131	26.40	3.227	0.074@
	Female	429	26.38	2.947	
Autonomy	Male	131	19.42	2.871	0.247@
	Female	429	19.49	3.064	
Collegiality	Male	131	26.50	3.689	1.416@
	Female	429	26.95	3.015	
Ethics	Male	131	24.05	3.299	2.487*
	Female	429	24.86	3.222	
Vision	Male	131	14.56	2.297	0.768@
	Female	429	14.38	2.368	
Leadership Skills	**Male**	**131**	**132.35**	**13.100**	**0.308@**
	Female	**429**	**132.73**	**12.182**	

Note: @indicates not significant at 0.05 level; *indicates significant at 0.05 level

Table 4.14 showed the differences in the mean scores of leadership skills among student teachers in various dimensions with regard to gender. It is evident from the table that no significant difference was found among male and female student teachers in the dimensions such as – Effectiveness, Autonomy, Collegiality, and Vision, as the calculated t-values were found to be lesser than the table t-value (1.96) for 558 df at 0.05 level of significance. However, a significant difference was found among male and female student teachers in the dimensions – Risk Taking, and Ethics as the calculated t-values were found to be greater than the table t-value (1.96) for 558 df at 0.05 level of significance.

Overall mean scores of leadership skills of student teachers when compared with gender the mean values for male and female are 132.35 and 132.73 respectively. While comparing the mean scores of male and female student teachers, there was slight difference indicating that female student teachers have slightly better leadership skills than the male student teachers.

Overall t-value was found to be 0.308 which is lesser than the table t-value (1.96) for 558df at 0.05 level of significance. Thus, the hypothesis statement "there is no significant difference in the mean scores of leadership skills between the groups of student teachers in terms of gender" stands accepted. Therefore, it is concluded there is no significant difference in the mean scores of leadership skills between the groups of student teachers in terms of gender.

Objective-10: To compare mean scores of student teachers leadership skills with respect to age.

Hypothesis-06: There is no significant difference in the mean scores of leadership skills between the groups of student teachers in terms of age.

Table 4.15: t-test results of comparison of age scores of leadership skills

Variable and its Dimensions	Age	N	Mean	S.D.	t-value
Risk Taking	Below 30 Years	500	20.66	3.054	3.928*
	30 years and above	60	22.32	3.281	
Effectiveness	Below 30 Years	500	26.30	2.958	1.990*
	30 years and above	60	27.12	3.365	
Autonomy	Below 30 Years	500	19.40	3.018	1.833@
	30 years and above	60	20.15	2.951	
Collegiality	Below 30 Years	500	26.70	3.192	3.134*

	30 years and above	60	28.05	2.902	
Ethics	Below 30 Years	500	24.60	3.230	1.421@
	30 years and above	60	25.23	3.436	
Vision	Below 30 Years	500	14.32	2.312	3.247*
	30 years and above	60	15.35	2.483	
Leadership Skills	**Below 30 Years**	**500**	**131.97**	**12.046**	**3.730***
	30 years and above	**60**	**138.22**	**13.861**	

Note: @indicates not significant at 0.05 level; *indicates significant at 0.05 level

Table 4.15 showed the differences in the mean scores of leadership skills among student teachers in various dimensions with regard to age. It is evident from the table that a significant difference was found among student teachers of below 30 years and 30 years & above in the dimensions such as – Risk Taking, Effectiveness, Collegiality, and Vision, as the calculated t-values were found to be greater than the table t-value (1.96) for 558 df at 0.05 level of significance. However, no significant difference was found among student teachers of below 30 years and 30 years & above in the dimensions – Autonomy and Ethics as the calculated t-values were found to be lesser than the table t-value (1.96) for 558 df at 0.05 level of significance.

Overall mean scores of leadership skills of student teachers with respect to age is provided in table 4.15 with a mean scores of 131.97 for below 30 years and 138.22 for 30 years and above showing that leadership skills of student teachers for 30 years & above were more than below 30 years. Overall t-value was found to be 3.730 which is greater than the table t-value 1.96 for 558 df at 0.05 level of significance. Thus, the hypothesis statement "there is no significant difference in the mean scores of leadership skills between the groups of student teachers in terms of age" stands rejected. Therefore, it is concluded there is a significant difference in the mean scores of leadership skills between the groups of student teachers in terms of age.

Academic Achievement and its demographic variables (Gender and Age)

Objective-11: To compare mean scores of student teachers academic achievement with respect to gender.

Hypothesis-07: There is no significant difference in the mean scores of academic achievement between the groups of student teachers in terms of gender.

Table 4.16: t-test results of comparison of gender scores of academic achievement

Demographic variable	Group	N	Mean	S.D.	t-value
Gender	Male	131	62.75	9.390	**3.054***
	Female	429	65.70	9.757	

Note: *indicates significant at 0.05 level

From the table 4.16, the overall mean scores of academic achievement of student teachers with respect to gender showed mean value of 62.75 for male and 65.70 for female student teachers. It indicated that the academic achievement mean scores of female student teachers were more than male student teachers. Female student teachers showed better academic achievement than the male student teachers. It can be also seen from the results that t-value (3.054) was found to be greater than the table t-value (1.96) for 558df at 0.05 level of significance. Thus, the hypothesis statement "there is no significant difference in the mean scores of academic achievement between the groups of student teachers in terms of gender" stands rejected. Therefore, it is concluded there is a significant difference in the mean scores of academic achievement between the groups of student teachers in terms of gender.

Objective-12: To compare mean scores of student teachers academic achievement with respect to age.

Hypothesis-08: There is no significant difference in the mean scores of academic achievement between the groups of student teachers in terms of age.

Table 4.17: t-test results of comparison of age scores of academic achievement

Demographic variable	Group	N	Mean	S.D.	t-value
Age	Below 30 years	500	64.98	9.710	**0.176@**
	30 years and above	60	65.22	10.111	

Note: @indicates not significant at 0.05 level

From the table 4.17, the overall mean scores of academic achievement of student teachers with respect to age showed mean values of 64.98 for below 30 years and 65.22 for 30 years & above. While comparing the mean scores for student

teachers of below 30 years and 30 years & above, there was slight difference indicating that student teachers of 30 years & above have slightly better academic achievement than student teachers of below 30 years. The calculated t-value (0.176) was also found to be lower than the table t- value (1.96) for 558 df at 0.05 level of significance. Thus, the hypothesis statement "there is no significant difference in the mean scores of academic achievement between the groups of student teachers in terms of age" stands accepted. Therefore, it is concluded there is no significant difference in the mean scores of academic achievement between the groups of student teachers in terms of age.

Teaching Competence and its demographic variables (educational qualification and pedagogy)

Objective-13**:** To study the influence of student teachers educational qualification on teaching competence**.**

Hypothesis-09**:** There is no significant influence of student teachers educational qualification on teaching competence.

Table 4.18: showing analysis of variance of the teaching competence with dimension wise among student teachers with respect to their educational qualification

Variable and its Dimensions	Source of variation	SS	MS	F-Value
Planning Lessons	Between Groups	24.438	12.219	1.724@
	Within Groups	3948.417	7.089	
Classroom Management	Between Groups	8.900	4.450	0.216@
	Within Groups	11485.655	20.621	
Knowledge of Subject	Between Groups	1.725	.862	0.177@
	Within Groups	2717.247	4.878	
Interpersonal Relationships	Between Groups	10.278	5.139	1.931@
	Within Groups	1482.077	2.661	
Development of teaching learning material	Between Groups	13.831	6.916	0.688@
	Within Groups	5595.667	10.046	
Time management	Between Groups	4.280	2.140	0.973@
	Within Groups	1225.675	2.200	

Evaluation process during teaching learning	Between Groups	28.707	14.354	0.931@
	Within Groups	8587.677	15.418	
Competencies related to working with parents, community and other agencies	Between Groups	6.584	3.292	0.353@
	Within Groups	5191.638	9.321	
Teaching Competence	**Between Groups**	**218.194**	**109.097**	**0.352@**
	Within Groups	**172769.742**	**310.179**	

Note: @ indicates not significant at 0.05 level

It is clear from the above table 4.18 that the computed value of "F" for Planning lessons in teaching competence (1.724) is lesser than the critical value of "F" (3.087) for 2 and 557 df at 0.05 level of significance. Therefore, there is no significant difference in the teaching competence dimension Planning lessons among student teachers with respect to educational qualification.

The computed value of "F" for Classroom management in teaching competence (0.216) is lesser than the critical value of "F" (3.087) for 2 and 557 df at 0.05 level of significance. Therefore, there is no significant difference in the teaching competence dimension Classroom management among student teachers with respect to educational qualification.

The computed value of "F" for Knowledge of subject in teaching competence (0.177) is lesser than the critical value of "F" (3.087) for 2 and 557 df at 0.05 level of significance. Therefore, there is no significant difference in the teaching competence dimension Knowledge of subject among student teachers with respect to educational qualification.

The computed value of "F" for Interpersonal relationships in teaching competence (1.931) is lesser than the critical value of "F" (3.087) for 2 and 557 df at 0.05 level of significance. Therefore, there is no significant difference in the teaching competence dimension Interpersonal relationships among student teachers with respect to educational qualification.

The computed value of "F" for Development of teaching learning material in teaching competence (0.688) is lesser than the critical value of "F" (3.087) for 2 and 557 df at 0.05 level of significance. Therefore, there is no significant difference in the teaching competence dimension Development of teaching learning material among student teachers with respect to educational qualification.

The computed value of "F" for Time management in teaching competence (0.973) is lesser than the critical value of "F" (3.087) for 2 and 557 df at 0.05 level of significance. Therefore, there is no significant difference in the teaching competence dimension Time management among student teachers with respect to educational qualification.

The computed value of "F" for Evaluation process during teaching learning in teaching competence (0.931) is lesser than the critical value of "F" (3.087) for 2 and 557 df at 0.05 level of significance. Therefore, there is no significant difference in the teaching competence dimension Evaluation process during teaching learning among student teachers with respect to educational qualification.

The computed value of "F" for Competencies related to working with parents, community and other agencies in teaching competence (0.353) is lesser than the critical value of "F" (3.087) for 2 and 557 df at 0.05 level of significance. Therefore, there is no significant difference in the teaching competence dimension Competencies related to working with parents, community and other agencies among student teachers with respect to educational qualification.

Overall computed value of "F" for teaching competence (0.352) is lesser than the critical value of "F" (3.087) for 2 and 557 df at 0.05 level of significance. Thus, the null hypothesis which stated that "there is no significant influence of student teachers educational qualification on teaching competence" is accepted. Therefore, it is concluded **t**here is no significant influence of student teachers educational qualification on teaching competence.

Objective-14: To study the influence of student teachers pedagogy on teaching competence**.**

Hypothesis-10: There is no significant influence of student teachers pedagogy on teaching competence.

Table 4.19: showing analysis of variance of the teaching competence with dimension wise among student teachers with respect to their pedagogy.

Variable and its Dimensions	**Source of variation**	**SS**	**MS**	**'F' Value**
Planning Lessons	Between Groups	19.085	6.362	0.895@
	Within Groups	3953.771	7.111	

Classroom Management	Between Groups	45.961	15.320	0.744@
	Within Groups	11448.594	20.591	
Knowledge of Subject	Between Groups	29.416	9.805	2.027@
	Within Groups	2689.556	4.837	
Interpersonal Relationships	Between Groups	22.089	7.363	2.784*
	Within Groups	1470.266	2.644	
Development of teaching learning material	Between Groups	27.526	9.175	0.914@
	Within Groups	5581.972	10.040	
Time management	Between Groups	7.271	2.424	1.102@
	Within Groups	1222.685	2.199	
Evaluation process during teaching learning	Between Groups	52.539	17.513	1.137@
	Within Groups	8563.845	15.403	
Competencies related to working with parents, community and other agencies	Between Groups	8.485	2.828	0.303@
	Within Groups	5189.736	9.334	
Teaching Competence	**Between Groups**	**1047.505**	**349.168**	**1.129@**
	Within Groups	**171940.430**	**309.245**	

Note: @ indicates not significant at 0.05 level; *indicates significant at 0.05 level

It is clear from the above table 4.19 that the computed value of "F" for Planning lessons in teaching competence (0.895) is lesser than the critical value of "F" (2.696) for 3 and 556 df at 0.05 level of significance. Therefore, there is no significant difference in the teaching competence dimension Planning lessons among student teachers with respect to pedagogy.

The computed value of "F" for Classroom management in teaching competence (0.744) is lesser than the critical value of "F" (2.696) for 3 and 556 df at 0.05 level of significance. Therefore, there is no significant difference in the teaching competence dimension Classroom management among student teachers with respect to pedagogy.

The computed value of "F" for Knowledge of subject in teaching competence (2.027) is lesser than the critical value of "F" (2.696) for 3 and 556 df at 0.05 level of significance. Therefore, there is no significant difference in the teaching competence dimension Knowledge of subject among student teachers with respect to pedagogy.

The computed value of "F" for Interpersonal relationships in teaching competence (2.784) is greater than the critical value of "F" (2.696) for 3 and 556 df at 0.05 level of significance. Therefore, there is a significant difference in the teaching

competence dimension Interpersonal relationships among student teachers with respect to pedagogy.

The computed value of "F" for Development of teaching learning material in teaching competence (0.914) is lesser than the critical value of "F" (2.696) for 3 and 556 df at 0.05 level of significance. Therefore, there is no significant difference in the teaching competence dimension Development of teaching learning material among student teachers with respect to pedagogy.

The computed value of "F" for Time management in teaching competence (1.102) is lesser than the critical value of "F" (2.696) for 3 and 556 df at 0.05 level of significance. Therefore, there is no significant difference in the teaching competence dimension Time management among student teachers with respect to pedagogy.

The computed value of "F" for Evaluation process during teaching learning in teaching competence score (1.137) is lesser than the critical value of "F" (2.696) for 3 and 556 df at 0.05 level of significance. Therefore, there is no significant difference in the teaching competence dimension Evaluation process during teaching learning among student teachers with respect to pedagogy.

The computed value of "F" for Competencies related to working with parents, community and other agencies in teaching competence (0.303) is lesser than the critical value of "F" (2.696) for 3 and 556 df at 0.05 level of significance. Therefore, there is no significant difference in the teaching competence dimension Competencies related to working with parents, community and other agencies among student teachers with respect to pedagogy.

Overall computed value of "F" for teaching competence (1.129) is lesser than the critical value of "F" (2.696) for 3 and 556 df at 0.05 level of significance. Thus, the null hypothesis which stated that "there is no significant influence of student teachers pedagogy on teaching competence" is accepted. Therefore, it is concluded there is no significant influence of student teachers pedagogy on teaching competence.

Digital Literacy and its demographic variables (educational qualification and pedagogy)

Objective-15: To study the influence of student teachers educational qualification on digital literacy.

Hypothesis-11**:** There is no significant influence of student teachers educational qualification on digital literacy.

Table 4.20: showing analysis of variance of digital literacy with dimension wise among student teachers with respect to their educational qualification

Variable and its Dimensions	**Source of variation**	**SS**	**MS**	**'F' Value**
Participation and understanding of digital practices	Between Groups	9.234	4.617	1.172@
	Within Groups	2193.902	3.939	
Access and integrate information	Between Groups	53.579	26.789	4.201*
	Within Groups	3552.205	6.377	
Critically evaluate information, online interaction and online tools	Between Groups	9.751	4.876	1.772@
	Within Groups	1532.847	2.752	
Manage and communicate information	Between Groups	10.926	5.463	2.172@
	Within Groups	1401.067	2.515	
Collaborate and share digital content	Between Groups	29.800	14.900	8.186*
	Within Groups	1013.850	1.820	
Digital Literacy	**Between Groups**	**477.851**	**238.925**	**4.437***
	Within Groups	**29993.692**	**53.849**	

Note: @ indicates not significant at 0.05 level; (*) indicates significant at 0.05 level

It is clear from the above table 4.20 that the computed value of "F" for Participation and understanding of digital practices in digital literacy (1.172) is lesser than the critical value of "F" (3.087) for 2 and 557 df at 0.05 level of significance. Therefore, there is no significant difference in the digital literacy dimension Participation and understanding of digital practices among student teachers with respect to educational qualification.

The computed value of "F" for Access and integrate information in digital literacy (4.201) is greater than the critical value of "F" (3.087) for 2 and 557 df at 0.05 level of significance. Therefore, there is a significant difference in the digital literacy dimension Access and integrate information among student teachers with respect to educational qualification.

The computed value of "F" for Critically evaluate information, online interaction and online tools in digital literacy (1.772) is lesser than the critical value of "F" (3.087) for 2 and 557 df at 0.05 level of significance. Therefore, there is no

significant difference in the digital literacy dimension Critically evaluate information, online interaction and online tools among student teachers with respect to educational qualification.

The computed value of "F" for Manage and communicate information in digital literacy (2.172) is lesser than the critical value of "F" (3.087) for 2 and 557 df at 0.05 level of significance. Therefore, there is no significant difference in the digital literacy dimension Manage and communicate information among student teachers with respect to educational qualification.

The computed value of "F" for Collaborate and share digital content in digital literacy (8.186) is greater than the critical value of "F" (3.087) for 2 and 557 df at 0.05 level of significance. Therefore, there is a significant difference in the digital literacy dimension Collaborate and share digital content among student teachers with respect to educational qualification.

Overall computed value of "F" for digital literacy score (4.437) is greater than the critical value of "F" (3.087) for 2 and 557 df at 0.05 level of significance. Thus, the null hypothesis which stated that "there is no significant influence of student teachers educational qualification on digital literacy" is rejected. Therefore, it is concluded there is a significant influence of student teachers educational qualification on digital literacy.

Objective-16: To study the influence of student teachers pedagogy on digital literacy.

Hypothesis-12: There is no significant influence of student teachers pedagogy on digital literacy.

Table 4.21: showing analysis of variance of digital literacy with dimension wise among student teachers with respect to their pedagogy

Variable and its Dimensions	**Source of variation**	**SS**	**MS**	**'F' Value**
Participation and understanding of digital practices	Between Groups	50.151	16.717	4.317*
	Within Groups	2152.985	3.872	
Access and integrate information	Between Groups	74.098	24.699	3.888*
	Within Groups	3531.686	6.352	
Critically evaluate information, online interaction and online tools	Between Groups	17.705	5.902	2.152@
	Within Groups	1524.893	2.743	

Manage and communicate information	Between Groups	11.585	3.862	1.533@
	Within Groups	1400.408	2.519	
Collaborate and share digital content	Between Groups	12.197	4.066	2.192@
	Within Groups	1031.453	1.855	
Digital Literacy	**Between Groups**	**546.953**	**182.318**	**3.387***
	Within Groups	**29924.589**	**53.821**	

Note: @ indicates not significant at 0.05 level; (*) indicates significant at 0.05 level

It is clear from the above table 4.21 that the computed value of "F" for Participation and understanding of digital practices in digital literacy (4.317) is greater than the critical value of "F" (2.696) for 3 and 556 df at 0.05 level of significance. Therefore, there is a significant difference in the digital literacy dimension Participation and understanding of digital practices among student teachers with respect to pedagogy.

The computed value of "F" for Access and integrate information in digital literacy (3.888) is greater than the critical value of "F" (2.696) for 3 and 556 df at 0.05 level of significance. Therefore, there is a significant difference in the digital literacy dimension Access and integrate information among student teachers with respect to pedagogy.

The computed value of "F" for Critically evaluate information, online interaction and online tools in digital literacy (2.152) is lesser than the critical value of "F" (2.696) for 3 and 556 df at 0.05 level of significance. Therefore, there is no significant difference in the digital literacy dimension Critically evaluate information, online interaction and online tools among student teachers with respect to pedagogy.

The computed value of "F" for Manage and communicate information in digital literacy (1.533) is lesser than the critical value of "F" (2.696) for 3 and 556 df at 0.05 level of significance. Therefore, there is no significant difference in the digital literacy dimension Manage and communicate information among student teachers with respect to pedagogy.

The computed value of "F" for Collaborate and share digital content in digital literacy (2.192) is lesser than the critical value of "F" (2.696) for 3 and 556 df at 0.05 level of significance. Therefore, there is no significant difference in the digital literacy dimension Collaborate and share digital content among student teachers with respect to pedagogy.

Overall computed value of "F" for digital literacy (3.387) is greater than the critical value of "F" (2.696) for 3 and 556 df at 0.05 level of significance. Thus, the null hypothesis which stated that "there is no significant influence of student teachers pedagogy on digital literacy" is rejected. Therefore, it is concluded there is a significant influence of student teachers pedagogy on digital literacy.

Leadership Skills and its demographic variables (educational qualification and pedagogy)

Objective-17: To study the influence of student teachers educational qualification on leadership skills.

Hypothesis-13: There is no significant influence of student teachers educational qualification on leadership skills.

Table 4.22: showing analysis of variance of leadership skills with dimension wise among student teachers with respect to their educational qualification

Variable and its Dimensions	Source of variation	SS	MS	'F' Value
Risk Taking	Between Groups	11.010	5.505	0.565@
	Within Groups	5425.845	9.741	
Effectiveness	Between Groups	18.996	9.498	1.047@
	Within Groups	5051.917	9.070	
Autonomy	Between Groups	16.923	8.462	0.929@
	Within Groups	5072.775	9.107	
Collegiality	Between Groups	4.408	2.204	0.216@
	Within Groups	5674.447	10.188	
Ethics	Between Groups	35.607	17.804	1.684@
	Within Groups	5888.277	10.571	
Vision	Between Groups	11.101	5.551	1.004@
	Within Groups	3077.897	5.526	
Leadership Skills Score	**Between Groups**	**397.154**	**198.577**	**1.295@**
	Within Groups	**85439.417**	**153.392**	

Note: @ indicates not significant at 0.05 level

It is clear from the above table 4.22 that the computed value of "F" for Risk Taking in leadership skills (0.565) is lesser than the critical value of "F" (3.087) for 2 and 557 df at 0.05 level of significance. Therefore, there is no significant difference in

the leadership skills dimension Risk Taking among student teachers with respect to educational qualification.

The computed value of "F" for Effectiveness in leadership skills (1.047) is lesser than the critical value of "F" (3.087) for 2 and 557 df at 0.05 level of significance. Therefore, there is no significant difference in the leadership skills dimension Effectiveness among student teachers with respect to educational qualification.

The computed value of "F" for Autonomy in leadership skills (0.929) is lesser than the critical value of "F" (3.087) for 2 and 557 df at 0.05 level of significance. Therefore, there is no significant difference in the leadership skills dimension Autonomy among student teachers with respect to educational qualification.

The computed value of "F" for Collegiality in leadership skills (0.216) is lesser than the critical value of "F" (3.087) for 2 and 557 df at 0.05 level of significance. Therefore, there is no significant difference in the leadership skills dimension Collegiality among student teachers with respect to educational qualification.

The computed value of "F" for Ethics in leadership skills (1.684) is lesser than the critical value of "F" (3.087) for 2 and 557 df at 0.05 level of significance. Therefore, there is no significant difference in the leadership skills dimension Ethics among student teachers with respect to educational qualification.

The computed value of "F" for Vision in leadership skills (1.004) is lesser than the critical value of "F" (3.087) for 2 and 557 df at 0.05 level of significance. Therefore, there is no significant difference in the leadership skills dimension Vision among student teachers with respect to educational qualification.

Overall computed value of "F" for leadership skills (1.295) is lesser than the critical value of "F" (3.087) for 2 and 557 df at 0.05 level of significance. Thus, the null hypothesis which stated that "there is no significant influence of student teachers educational qualification on leadership skills" is accepted. Therefore, it is concluded there is no significant influence of student teachers educational qualification on leadership skills.

Objective-18: To study the influence of student teachers pedagogy on leadership skills.

Hypothesis-14: There is no significant influence of student teachers pedagogy on leadership skills.

Table 4.23: showing analysis of variance of leadership skills with dimension wise among student teachers with respect to their pedagogy

Variable and its Dimensions	**Source of variation**	**SS**	**MS**	**'F' Value**
Risk Taking	Between Groups	78.763	26.254	2.724*
	Within Groups	5358.092	9.637	
Effectiveness	Between Groups	143.344	47.781	5.391*
	Within Groups	4927.568	8.863	
Autonomy	Between Groups	104.450	34.817	3.883*
	Within Groups	4985.248	8.966	
Collegiality	Between Groups	53.854	17.951	1.774@
	Within Groups	5625.001	10.117	
Ethics	Between Groups	95.639	31.880	3.041*
	Within Groups	5828.245	10.482	
Vision	Between Groups	27.661	9.220	1.675@
	Within Groups	3061.337	5.506	
Leadership Skills	**Between Groups**	**2173.697**	**724.566**	**4.815***
	Within Groups	**83662.875**	**150.473**	

Note: @ indicates not significant at 0.05 level; (*) indicates significant at 0.05 level

It is clear from the above table 4.23 that the computed value of "F" for Risk Taking in leadership skills (2.724) is greater than the critical value of "F" (2.696) for 3 and 556 df at 0.05 level of significance. Therefore, there is a significant difference in the leadership skills dimension Risk Taking among student teachers with respect to pedagogy.

The computed value of "F" for Effectiveness in leadership skills (5.391) is greater than the critical value of "F" (2.696) for 3 and 556 df at 0.05 level of significance. Therefore, there is a significant difference in the leadership skills dimension Effectiveness among student teachers with respect to pedagogy.

The computed value of "F" for Autonomy in leadership skills (3.883) is greater than the critical value of "F" (2.696) for 3 and 556 df at 0.05 level of

significance. Therefore, there is a significant difference in the leadership skills dimension Autonomy among student teachers with respect to pedagogy.

The computed value of "F" for Collegiality in leadership skills (1.774) is lesser than the critical value of "F" (2.696) for 3 and 556 df at 0.05 level of significance. Therefore, there is no significant difference in the leadership skills dimension Collegiality among student teachers with respect to pedagogy.

The computed value of "F" for Ethics in leadership skills (3.041) is greater than the critical value of "F" (2.696) for 3 and 556 df at 0.05 level of significance. Therefore, there is a significant difference in the leadership skills dimension Ethics among student teachers with respect to pedagogy.

The computed value of "F" for Vision in leadership skills (1.675) is lesser than the critical value of "F" (2.696) for 3 and 556 df at 0.05 level of significance. Therefore, there is no significant difference in the leadership skills dimension Vision among student teachers with respect to pedagogy.

Overall computed value of "F" for leadership skills (4.815) is greater than the critical value of "F" (2.696) for 3 and 556 df at 0.05 level of significance. Thus, the null hypothesis which stated that "there is no significant influence of student teachers pedagogy on leadership skills" is rejected. Therefore, it is concluded there is a significant influence of student teachers pedagogy on leadership skills.

Academic Achievement and its demographic variables (educational qualification and pedagogy)

Objective-19: To study the influence of student teachers educational qualification on academic achievement.

Hypothesis-15: There is no significant influence of student teachers educational qualification on academic achievement.

Table 4.24: showing analysis of variance of academic achievement among student teachers with respect to their educational qualification

Educational Qualifications	N	M	SD	Source of Variation	SS	DF	MS	'F' Value
U.G.	200	62.88	9.550	Between Groups	1479.580	2	739.790	7.985*

P.G.	320	66.35	9.601	Within Groups	51602.392	557	92.643	
Others	40	64.93	10.186					
Total	**560**	**65.01**	**9.745**	**Total**	**53081.971**	**Significant at 0.05 level**		

Note: @ indicates not significant at 0.05 level; (*) indicates significant at 0.05 level

The obtained results from the above table 4.24 indicates that the computed value of "F" for academic achievement (7.985) is greater than the critical value of "F" (3.087) for 2 and 557 df at 0.05 level of significance. The mean scores of academic achievement of student teachers with respect to educational qualification showed 62.88 for U.G., 66.35 for P.G., and 64.93 for Others. It indicated that the academic achievement of P.G. educational qualification student teachers performed better than U.G. and Others educational qualification student teachers. The calculated "F" value (7.985) was also found to be greater than the critical value of "F" (3.087) for 2 and 557 df at 0.05 level of significance. Thus, the hypothesis which stated that "there is no significant influence of student teachers qualification on academic achievement" is rejected. Therefore, it is concluded there is a significant influence of student teachers educational qualification on academic achievement.

Objective-20: To study the influence of student teachers pedagogy on academic achievement.

Hypothesis-16: There is no significant influence of student teachers pedagogy on academic achievement.

Table 4.25: showing analysis of variance of academic achievement among student teachers with respect to their pedagogy

Pedagogy	**N**	**M**	**SD**	**Source of Variation**	**SS**	**DF**	**MS**	**'F' Value**
Pedagogy of English	157	64.29	9.734	**Between Groups**	672.010	3	224.003	2.376@
Pedagogy of Mathematics	56	67.88	10.519	**Within Groups**	52409.962	556	94.263	
Pedagogy of Science	89	65.89	8.463					

Pedagogy of Social Studies	258	64.52	9.910	**Total**	**53081.971**	**Not significant at 0.05 level**
Total	**560**	**65.01**	**9.745**			

Note: @ indicates not significant at 0.05 level

The obtained results from the above table 4.25 indicated that the computed value of "F" for academic achievement (2.376) is lesser than the critical value of "F" (2.696) for 3 and 556 df at 0.05 level of significance. The mean scores of academic achievement of student teachers with respect to pedagogy showed of 64.29 for Pedagogy of English, 67.88 for Pedagogy of Mathematics, 65.89 for Pedagogy of Science, and 64.52 for Pedagogy of Social Studies opted student teachers. It indicated that the academic achievements of student teachers belonging to Pedagogy of Mathematics were slightly better than Pedagogy of English, Pedagogy of Science, and Pedagogy of Social Studies opted student teachers. The calculated "F" value (2.376) was also found to be lesser than the critical value of "F" (2.696) for 3 and 556 df at 0.05 level of significance. Thus, the null hypothesis which stated that "there is no significant influence of student teachers pedagogy on academic achievement" is accepted. Therefore, it is concluded there is no significant influence of student teachers pedagogy on academic achievement.

Section 4.2.4: Correlation Analysis

In this section the scores of teaching competence, leadership skills, digital literacy, and academic achievement are obtained to find out if there is any significant relationship among the variables – teaching competence, leadership skills, digital literacy, and academic achievement. With the help of Pearson Product Moment correlation and Multiple Correlation the hypothesis were tested to find out the relationship between the variables.

Objective-21: To study the correlation between teaching competence and digital literacy of student teachers.

Hypothesis-17: There is no significant relationship between teaching competence and digital literacy of student teachers.

Table 4.26: showing coefficient correlation between teaching competence and digital literacy of student teachers

Variable	Digital Literacy	N	Remarks
Teaching Competence	Pearson Correlation = 0 .301**	560	P<0.01

**Correlation is significant at 0.01 level (2-tailed)

The Pearson product moment correlation of teaching competence and digital literacy was found to be low positive correlation and statistically significant (r = 0.301, $p < 0.01$). Hence, the null hypothesis which stated that "there is no significant relationship between teaching competence and digital literacy of student teachers" is not accepted. Therefore, it is concluded that there is a low positive correlation and also there is a significant correlation between teaching competence and digital literacy of student teachers.

Objective-22: To study the correlation between teaching competence and leadership skills of student teachers.

Hypothesis-18: There is no significant relationship between teaching competence and leadership skills of student teachers.

Table 4.27: showing coefficient correlation between teaching competence and leadership skills of student teachers

Variable	Leadership Skills	N	Remarks
Teaching Competence	Pearson Correlation = 0.488**	560	P<0.01

**Correlation is significant at 0.01 level (2-tailed)

The obtained result of Pearson product moment correlation of teaching competence and leadership skills was found to be low positive correlation and was statistically significant (r = 0.488, $p < 0.01$). Hence, the null hypothesis which stated that "there is no significant relationship between teaching competence and leadership skills of student teachers" is not accepted. Therefore, it is concluded that there is a low positive correlation and also there is a significant correlation between teaching competence and leadership skills of student teachers.

Objective-23: To study the correlation between teaching competence and academic achievement of student teachers.

Hypothesis-19: There is no significant relationship between teaching competence and academic achievement of student teachers.

Table 4.28: showing coefficient correlation between teaching competence and academic achievement of student teachers

Variable	Academic Achievement	**N**	**Remarks**
Teaching Competence	Pearson Correlation = 0.046@	560	P>0.01

@Correlation is not significant at 0.01 level (2-tailed)

The obtained result of Pearson product moment correlation of teaching competence and academic achievement showed that there is a weak correlation and statistically not significant (r = 0.046, p > 0.01). Hence, the null hypothesis which stated that "there is no significant relationship between teaching competence and academic achievement of student teachers" is accepted. Therefore, it is concluded that there is a weak correlation and also there is no significant correlation between teaching competence and academic achievement of student teachers.

Objective-24: To study the correlation between digital literacy and leadership skills of student teachers.

Hypothesis-20: There is no significant relationship between digital literacy and leadership skills of student teachers.

Table 4.29: showing coefficient correlation digital literacy and leadership skills of student teachers

Variable	**Leadership Skills**	**N**	**Remarks**
Digital Literacy	Pearson Correlation = 0.299**	560	P<0.01

**Correlation is significant at 0.01 level (2-tailed)

The obtained result of Pearson product moment correlation of digital literacy and leadership skills was found to be low positive correlation and statistically significant (r = 0.299, p < 0.01). Hence, the null hypothesis which stated that "there is no significant relationship between digital literacy and leadership skills of student teachers" is not accepted. Therefore, it is concluded that there is a low positive correlation and also there is a significant correlation between digital literacy and leadership skills of student teachers.

Objective-25: To study the correlation between digital literacy and academic achievement of student teachers.

Hypothesis-21: There is no significant relationship between digital literacy and academic achievement of student teachers.

Table 4.30: showing coefficient correlation digital literacy and academic achievement of student teachers

Variable	Academic Achievement	**N**	**Remarks**
Digital Literacy	Pearson Correlation = 0.010@	560	P>0.01

@Correlation is not significant at 0.01 level (2-tailed)

The obtained result of Pearson product moment correlation of digital literacy and academic achievement showed that there is a weak and negligible correlation and statistically not significant (r = 0.010, p > 0.01). Hence, the null hypothesis which stated that "there is no significant relationship between digital literacy and academic achievement of student teachers" is accepted. Therefore, it is concluded that there is a weak and negligible correlation and also there is no significant correlation between digital literacy and academic achievement of student teachers.

Objective-26: To study the Correlation between leadership skills and academic achievement of student teachers.

Hypothesis-22: There is no significant relationship between leadership skills and academic achievement of student teachers.

Table 4.31: showing coefficient correlation leadership skills and academic achievement of student teachers

Variable	Academic Achievement	**N**	**Remarks**
Leadership Skills	Pearson Correlation = 0.059@	560	P>0.01

@Correlation is not significant at 0.01 level (2-tailed)

The obtained result of Pearson product moment correlation of leadership skills and academic achievement showed that there is a weak correlation and statistically not significant (r = 0.059), p > 0.01). Hence, the null hypothesis which stated that "there is no significant relationship between leadership skills and academic achievement of student teachers" is accepted. Therefore, it is concluded that there is a weak correlation and also there is no significant correlation between leadership skills and academic achievement of student teachers.

Objective-27: To study the joint contribution of digital literacy and leadership skills in predicting teaching competence of student teachers.

Hypothesis-23: There is no significant joint contribution of digital literacy and leadership skills in predicting teaching competence of student teachers.

Table 4.32: Model Summary of Multiple Correlation (Predictors: (Constant), Digital Literacy, Leadership Skills and Criterion variable: Teaching Competence)

Model	R	R Square	Adjusted R Square	S.E of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F change
1	0.515[a]	0.265	0.262	15.111	0.265	100.299	2	557	0.000

a. Predictors: (Constant), Digital Literacy , Leadership Skills

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In table 4.32 the value of R (0.515) depicts the level of prediction of criterion variable. The value of R Square (0.265) is the coefficient of determination, and the value of adjusted R Square (0.262) is the modified version of R square that has been adjusted for the number of predictors in the model. The standard error of estimates (15.111) represents the average distance that observed value falls from regression line. The value of adjusted R square represents that digital literacy and leadership skills explain 26.2% of the variability of criterion value i.e teaching competence

Table 4.33: Multiple Correlation Coefficient in predicting teaching competence on the basis of their digital literacy and leadership skills

Variables	Remark
$R_{1(23)}$=0.515 1:Teaching Competence 2;Digital Literacy 3:Leadership Skills	p<0.01

From table 4.33, it is evident that multiple correlation coefficient is 0.515 which is significant at 0.01 level of significance. It indicated that the joint contribution of digital literacy and leadership skills in predicting teaching competence of student teachers is significant and moderate. Thus, the null hypothesis which stated that "there is no significant joint contribution of digital literacy and leadership skills in predicting teaching competence of student teachers" is rejected. Further, the joint contribution of digital literacy and leadership skills in predicting teaching competence

of student teachers is 26.5% which is little low. It may, therefore, be said that there was a low significant joint contribution of digital literacy and leadership skills in predicting teaching competence of student teachers.

Objective-28: To study the joint contribution of digital literacy and academic achievement in predicting teaching competence of student teachers.

Hypothesis-24: There is no significant joint contribution of digital literacy and academic achievement in predicting teaching competence of student teachers.

Table 4.34: Model Summary of Multiple Correlation (Predictors: (Constant), Digital Literacy, Academic Achievement and Criterion variable: Teaching Competence)

Model	R	R Square	Adjusted R Square	S.E of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F change
1	0.304[a]	0.093	0.089	16.788	0.093	28.391	2	557	0.000

a. Predictors: (Constant), Academic Achievement, Digital Literacy

In table 4.34 the value of R (0.304) depicts the level of prediction of criterion variable. The value of R Square (0.093) is the coefficient of determination, and the value of adjusted R Square (0.089) is the modified version of R square that has been adjusted for the number of predictors in the model. The standard error of estimates (16.788) represents the average distance that observed value falls from regression line. The value of adjusted R square represents that digital literacy and academic achievement explain 8.9% of the variability of criterion value i.e teaching competence.

Table 4.35: Multiple Correlation Coefficient in predicting teaching competence on the basis of their digital literacy and academic achievement

Variables	Remark
$R_{1(23)}$= 0.304 1:Teaching Competence 2:Digital Literacy 3:Academic Achievement	p<0.01

From table 4.35, it is evident that multiple correlation coefficient is 0.304 which is significant at 0.01 level of significance. It indicated that the joint contribution of digital literacy and academic achievement in predicting teaching competence of student teachers is significant and low. Thus, the null hypothesis which stated that "there is no significant joint contribution of digital literacy and academic achievement in predicting teaching competence of student teachers" is rejected. Further, the joint contribution of digital literacy and academic achievement in predicting teaching competence of student teachers is 8.9% which is low. It may, therefore, be said that there was a low significant joint contribution of digital literacy and academic achievement in predicting teaching competence of student teachers.

Objective-29: To study the joint contribution of leadership skills and academic achievement in predicting teaching competence of student teachers.

Hypothesis-25: There is no significant joint contribution of leadership skills and academic achievement in predicting teaching competence of student teachers.

Table 4.36: Model Summary of Multiple Correlation (Predictors: (Constant), Leadership Skills, Academic Achievement and Criterion variable: Teaching Competence)

Model	R	R Square	Adjusted R Square	S.E of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F change
1	0.488[a]	0.239	0.236	15.377	0.239	87.283	2	557	0.000

a. Predictors: (Constant), Academic Achievement, Leadership Skills

In table 4.36 the value of R (0.488) depicts the level of prediction of criterion variable. The value of R Square (0.239) is the coefficient of determination, and the value of adjusted R Square (0.236) is the modified version of R square that has been adjusted for the number of predictors in the model. The standard error of estimates (15.377) represents the average distance that observed value falls from regression line. The value of adjusted R square represents that leadership skills and academic achievement explain 23.6% of the variability of criterion value i.e teaching competence.

Table 4.37: Multiple Correlation Coefficient in predicting teaching competence on the basis of their leadership skills and academic achievement

Variables	Remark
$R_{1(23)}$= 0.488 1:Teaching Competence 2:Leadership Skills 3:Academic Achievement	p<0.01

From table 4.37, it is evident that multiple correlation coefficient is 0.488 which is significant at 0.01 level of significance. It indicated that the joint contribution of leadership skills and academic achievement in predicting teaching competence of student teachers is significant and moderate. Thus, the null hypothesis which stated that "there is no significant joint contribution of leadership skills and academic achievement in predicting teaching competence of student teachers" is rejected. Further, the joint contribution of leadership skills and academic achievement in predicting teaching competence of student teachers is 23.6% which is low. It may, therefore, be said that there was a moderate significant joint contribution of leadership skills and academic achievement in predicting teaching competence of student teachers.

Objective-30: To study the joint contribution of digital literacy, leadership skills and academic achievement in predicting teaching competence of student teachers.

Hypothesis-26: There is no significant joint contribution of digital literacy, leadership skills and academic achievement in predicting teaching competence of student teachers.

Table 4.38: Model Summary of Multiple Correlation (Predictors: (Constant), Digital Literacy, Leadership Skills, Academic Achievement)

Model	R	R Square	Adjusted R Square	S.E of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F change
1	0.515[a]	0.265	0.261	15.121	0.265	66.870	3	556	0.000

a. Predictors: (Constant), Academic Achievement , Digital Literacy , Leadership Skills

In table 4.38 the value of R (0.515) depicts the level of prediction of criterion variable. The value of R Square (0.265) is the coefficient of determination, and the value of adjusted R Square (0.261) is the modified version of R square that has been adjusted for the number of predictors in the model. The standard error of estimates (15.121) represents the average distance that observed value falls from regression line. The value of adjusted R square represents that digital literacy, leadership skills and academic achievement explain 26.1% of the variability of criterion value i.e. teaching competence.

Table 4.39: Multiple Correlation Coefficient in predicting teaching competence on the basis of their Digital Literacy, **leadership skills, and academic achievement**

Variables	Remark
$R_{1(234)}$= 0.515 1:Teaching Competence 2:Digital Literacy 3:Leadership Skills 4:Academic Achievement	p<0.01

From table 4.39, it is evident that multiple correlation coefficient is 0.515 which is significant at 0.01 level of significance. It indicated that the joint contribution of digital literacy, leadership skills and academic achievement in predicting teaching competence of student teachers is significant and moderate. Thus, the null hypothesis which stated that "there is no significant joint contribution of digital literacy, leadership skills and academic achievement in predicting teaching competence of student teachers" is rejected. Further, the joint contribution of digital literacy, leadership skills and academic achievement in predicting teaching competence of student teachers is 26.1% which is low. It may, therefore, be said that there was a moderate significant joint contribution of digital literacy, leadership skills and academic achievement in predicting teaching competence of student teachers.

CHAPTER – V

SUMMARY, FINDINGS, DISCUSSION, IMPLICATIONS AND SUGGESTIONS

5.1. Summary

5.1.1. Introduction

Education as an instrument for manifesting all round development, especially economic, social and political development of nation has been generally accepted by all well-known thinkers and educationist since time immemorial. Through education complete transformation is demonstrated at the behest of the individual abilities wherein he/she contributes meaningfully to society. The guiding forces to bring these desired changes in the individual rest with teachers, 'who constitute a critical component of the essential learning conditions for achieving the desired educational goals' (NEP 2020).

Teaching competencies can be understood as the process of developing the knowledge and skills necessary to carry out professional duties in an effective and efficient manner. Teaching competency includes controlling materials, overseeing learning programs, evaluating student progress, managing the classroom with the use of media resources, etc. (Singh, 2008).
Digital literacy is defined as the knowledge, skills and ability to handle and manipulate any digital apparatus/equipment and make informed judgment about effective utilization of digital tools in today's ICT based classroom.

Leadership skills can be seen as teacher leaders who direct the learning system in educational settings to bring desired outcomes in creating effective educational system and influence the lives of the students, thereby establishing credibility in their workplace and beyond.
Academic achievement is defined as knowledge acquired and skill developed in school subjects, typically indicated by test scores or teacher-assigned marks.

5.1.2. Need and significance of the study

One of UNESCO's major concerns is the provision of well-trained, supported, and qualified teacher. Under 'Quality Education through the Education 2030 Framework for Action', it advocates Member States to "ensure that teachers and educators are well-resourced, efficient, and efficiently managed systems, and that they are empowered, sufficiently recruited, well-trained, professionally qualified, motivated, and supported." The professional preparation and

nurturing of teachers is of paramount importance in context of ensuring quality education for all. AduYeboah & Yaw Kwaah (2018 as cited in Afalla, B., & Fabelico, F., 2020) also stated that pre-service teachers should develop their professional skills, pedagogical knowledge, and self-confidence before entering the teaching profession. Teaching competence of teachers need to be ensured at the very outset during pre-service courses and thus, it is quite logical to focus on this factor throughout teacher preparation programmes all over the world.

The study will help the entire fraternity of teacher education institutions – principals, teacher educators, and especially the young educators who are entrusted to shape the education system in the country. Their understanding of the significance of competence required in teaching to improve their methods in the classroom will advance their professional career and enable them to deliver high-quality instruction. A well-resourced, efficient, well-trained, and professionally qualified teacher will ensure to bring improvements in the classroom which is essential in today's ICT skilled based classroom.

Thus, choosing the right teacher training programs is essential from the very beginning of pre-service training where student teachers get the exposure to refine the required skills such as – teaching competence, digital literacy, leadership skills and their academic achievement, so that they will manage the classroom effectively and deliver quality education in the process. Therefore, the topic of the current study is extremely important from an academic, social, and professional standpoint for student teachers who will eventually work at the teaching institution in the future.

5.1.3. Statement of the problem

One of the key challenges that need urgent intervention in Nagaland education system is to ensure that students are equipped with the necessary knowledge and skills so that they can thrive successfully in the 21st century. Hence, it requires attention in teacher training programs so that competent teachers can identify the strength and skills of pupils and promote guidance and awareness to pursue the right vocation and skills. Their competence and knowledge will serve as a leverage to bridge the gap in fostering a culture of learning and development in the teaching profession. To the best of the researchers' knowledge and based on a search of peer-reviewed databases, no previous research on the teaching competency of student teachers in Nagaland state has been carried out taking into account each of the significant variables, including teaching

competence, digital literacy, leadership skills, and academic achievement. On this account the need and emergence of the study was designed with the hope of providing generalized information and awareness on the importance of teaching competence of student teachers to provide quality education and enhance learning outcomes. Therefore, the present study has emerged and will be entitled as **"Teaching Competence of Student Teachers in relation to Digital Literacy, Leadership Skills and Academic Achievement."**

5.1.4. Variables of the study

Dependent Variable: Teaching Competence.

Independent Variables: Digital Literacy, Leadership Skills, Academic Achievement.

Demographic Variables: Gender, Educational Qualification, Pedagogy, Age

5.1.5. Objectives of the study

1) To determine the level of Teaching Competence of student teachers.
2) To determine the level of Digital Literacy of student teachers.
3) To determine the level of Leadership Skills of student teachers.
4) To determine the level of Academic Achievement of student teachers.
5) To compare mean scores of student teachers teaching competence with respect to gender.
6) To compare mean scores of student teachers teaching competence with respect to age.
7) To compare mean scores of student teachers digital literacy with respect to gender.
8) To compare mean scores of student teachers digital literacy with respect to age.
9) To compare mean scores of student teachers leadership skills with respect to gender.
10) To compare mean scores of student teachers leadership skills with respect to age.
11) To compare mean scores of student teachers academic achievement with respect to gender.
12) To compare mean scores of student teachers academic achievement with respect to age.
13) To study the influence of student teachers educational qualification on teaching competence.
14) To study the influence of student teachers pedagogy on teaching competence.
15) To study the influence of student teachers educational qualification on digital literacy.
16) To study the influence of student teachers pedagogy on digital literacy.
17) To study the influence of student teachers educational qualification on leadership skills.
18) To study the influence of student teachers pedagogy on leadership skills.

19) To study the influence of student teachers educational qualification on academic achievement.
20) To study the influence of student teachers pedagogy on academic achievement.
21) To study the correlation between teaching competence and digital literacy of student teachers.
22) To study the correlation between teaching competence and leadership skills of student teachers.
23) To study the correlation between teaching competence and academic achievement of student teachers.
24) To study the correlation between digital literacy and leadership skills of student teachers.
25) To study the correlation between digital literacy and academic achievement of student teachers.
26) To study the correlation between leadership skills and academic achievement of student teachers.
27) To study the joint contribution of digital literacy and leadership skills in predicting teaching competence of student teachers.
28) To study the joint contribution of digital literacy and academic achievement in predicting teaching competence of student teachers.
29) To study the joint contribution of leadership skills and academic achievement in predicting teaching competence of student teachers.
30) To study the joint contribution of digital literacy, leadership skills and academic achievement in predicting teaching competence of student teachers.

5.1.6. Hypotheses of the study

1. There is no significant difference in the mean scores of teaching competence between the groups of student teachers in terms of gender.
2. There is no significant difference in the mean scores of teaching competence between the groups of student teachers in terms of age.
3. There is no significant difference in the mean scores of digital literacy between the groups of student teachers in terms of gender.
4. There is no significant difference in the mean scores of digital literacy between the groups of student teachers in terms of age.

5. There is no significant difference in the mean scores of leadership skills between the groups of student teachers in terms of gender.
6. There is no significant difference in the mean scores of leadership skills between the groups of student teachers in terms of age.
7. There is no significant difference in the mean scores of academic achievement between the groups of student teachers in terms of gender.
8. There is no significant difference in the mean scores of academic achievement between the groups of student teachers in terms of age.
9. There is no significant influence of student teachers educational qualification on teaching competence.
10. There is no significant influence of student teachers pedagogy on teaching competence.
11. There is no significant influence of student teachers educational qualification on digital literacy.
12. There is no significant influence of student teachers pedagogy on digital literacy.
13. There is no significant influence of student teachers educational qualification on leadership skills.
14. There is no significant influence of student teachers pedagogy on Leadership Skills.
15. There is no significant influence of student teachers educational qualification on academic achievement.
16. There is no significant influence of student teachers pedagogy on academic achievement.
17. There is no significant relationship between teaching competence and digital literacy of student teachers.
18. There is no significant relationship between teaching competence and leadership skills of student teachers.
19. There is no significant relationship between teaching competence and academic achievement of student teachers.
20. There is no significant relationship between digital literacy and leadership skills of student teachers.
21. There is no significant relationship between digital literacy and academic achievement of student teachers.

22. There is no significant relationship between leadership skills and academic achievement of student teachers.
23. There is no significant joint contribution of digital literacy and leadership skills in predicting teaching competence of student teachers.
24. There is no significant joint contribution of digital literacy and academic achievement in predicting teaching competence of student teachers.
25. There is no significant joint contribution of leadership skills and academic achievement in predicting teaching competence of student teachers.
26. There is no significant joint contribution of digital literacy, leadership skills and academic achievement in predicting teaching competence of student teachers.

5.1.7. Operational definitions of the key terms used

Teaching Competence: Teaching competence refers to the set of knowledge, abilities and beliefs a teacher possess that are needed for effective teaching.

Digital Literacy: Digital literacy is the ability to handle and manipulate any digital apparatus/equipment and make informed judgment about effective utilization of digital tools.

Leadership Skills: It refers to those abilities that exhibit in teacher leaders who lead within and beyond the classroom, and influence others towards improved educational practice.

Academic Achievement: In the present study academic achievement was indicated by marks obtained by B.Ed. student teachers in their Second Year (3^{rd} semester) examination enrolled for academic session (2021-2023).

Gender: Gender is classified as male and female in the present study.

Educational Qualification: It refers to student teachers status of their education or degree completed. It is classified as Undergraduate (UG), Postgraduate (PG), and Others include M.Phil or Ph.d degree.

Pedagogy: It refers to the area of specialization that student teachers belong to. It is categorized as pedagogy of mathematics, pedagogy of science, pedagogy of english, and pedagogy of social sciences.

Age: It is the state of being young or old. It is categorized into – below 30 years, and 30 years and above.

Student Teachers: A student teachers are learners who are registered in a secondary teacher training institution (B.Ed.).

5.1.8. Delimitations of the study

- The study was delimited to B.Ed. colleges and student teachers in Nagaland affiliated to Nagaland University.
- The present study was confined to Second Year (3rd semester) B.Ed. student teachers who are undergoing B.Ed. teacher training programme in Nagaland.
- The study was limited by including only the aforesaid variables namely- teaching competence, digital literacy, leadership skills and academic achievement.
- The studies conducted on teaching competence, digital literacy, leadership skills and academic achievement of B.Ed. student teachers are included in the review of literature.

5.2. Findings of the Study

1. Based on the percentage analysis 29.46% of student-teachers have average teaching competence level. Overall 68.93% of student teachers has average and above level of Teaching Competence.
2. Based on the percentage analysis 65.9% of student-teachers have average level of digital literacy. Overall, 85.5% of student teachers has average and above level of digital literacy.
3. Based on the percentage analysis 66.61% of student-teachers have average level of leadership skills. Overall, 83.75% of student teachers has average and above level of leadership skills.
4. Based on the percentage analysis 72.68% of student-teachers have average level of academic achievement. Overall, 86.25% of student teachers has average and above level of academic achievement.
5. There is no significant difference in the mean scores of teaching competence between the groups of student teachers in terms of gender**.**

6. There is no significant difference in the mean scores of teaching competence between the groups of student teachers in terms of age.
7. There is a significant difference in the mean scores of digital literacy between the groups of student teachers in terms of gender.
8. There is no significant difference in the mean scores of digital literacy between the groups of student teachers in terms of age.
9. There is no significant difference in the mean scores of leadership skills between the groups of student teachers in terms of gender.
10. There is a significant difference in the mean scores of leadership skills between the groups of student teachers in terms of age.
11. There is a significant difference in the mean scores of academic achievement between the groups of student teachers in terms of gender.
12. There is no significant difference in the mean scores of academic achievement between the groups of student teachers in terms of age**.**
13. There is no significant influence of student teachers educational qualification on teaching competence.

    13.a. *There is no significant influence among all the various dimensions (Planning Lessons, Classroom Management, Knowledge of Subject, Interpersonal Relationships, Development of teaching learning material, Time management, Evaluation process during teaching learning, and Competencies related to working with parents, community and other agencies) of teaching competence based on educational qualification.*
14. There is no significant influence of student teachers pedagogy on teaching competence.

    14.a. *There is no significant influence among various dimensions (planning lessons, classroom management, knowledge of subject*, *development of teaching learning material, time management, evaluation process during teaching learning, and competencies related to working with parents, community and other agencies)of leadership skills based on educational qualification. However, one dimension 'Intrapersonal relationship' was found to be significant among student teachers of Nagaland based on their pedagogy.*
15. There is a significant influence of student teachers educational qualification on digital literacy.

15.a. *There is a significant influence among various dimensions (Access and integrate information and Collaborate and share digital content) of digital literacy based on educational qualification. However, no significant difference was found on the dimensions - Participation and understanding of digital practices; Critically evaluate information, online interaction and online tools; and Manage and communicate information* of *digital literacy based on educational qualification.*

16. There is a significant influence of student teachers pedagogy on digital literacy.

    16.a. *There is a significant influence among various dimensions (Participation and understanding of digital practices and Access and integrate information) of digital literacy based on pedagogy. However no significant difference was found on the dimensions - Critically evaluate information, online interaction and online tools; Manage and communicate information; and Collaborate and share digital content of digital literacy based on pedagogy.*

17. There is no significant influence of student teachers educational qualification on leadership skills.

    17.a. *There is no significant influence among all the various dimensions - Risk Taking; Effectiveness; Autonomy; Collegiality; Ethics; and Vision of leadership skills based on educational qualification.*

18. There is a significant influence of student teachers pedagogy on leadership skills.

    18.a. *There is a significant influence among various dimensions (Risk taking, Effectiveness, Autonomy, and Ethics) of leadership skills based on pedagogy. The dimensions (Collegiality, and Vision) of leadership skills were found to insignificant based on pedagogy.*

19. There is significant influence of student teachers educational qualification on academic achievement.
20. There is no significant influence of student teachers pedagogy on academic achievement.
21. There is a low positive correlation and also there is a significant correlation between teaching competence and digital literacy of student teachers.
22. There is a low positive correlation and also there is a significant correlation between teaching competence and leadership skills of student teachers.

23. There is a weak correlation and also there is no significant correlation between teaching competence and academic achievement of student teachers.
24. There is a low positive correlation and also there is a significant correlation between digital literacy and leadership skills of student teachers.
25. There is a weak and negligible correlation and also there is no significant correlation between digital literacy and academic achievement of student teachers.
26. There is a weak correlation and also there is no significant correlation between leadership skills and academic achievement of student teachers.
27. There was a low moderate significant joint contribution of digital literacy and leadership skills in predicting teaching competence of student teachers.
28. There was a low significant joint contribution of digital literacy and academic achievement in predicting teaching competence of student teachers.
29. There was a low moderate significant joint contribution of leadership skills and academic achievement in predicting teaching competence of student teachers.
30. There was a low moderate significant joint contribution of digital literacy, leadership skills and academic achievement in predicting teaching competence of student teachers.

5.3. Discussion of the Findings

Objective-1: To determine the level of Teaching Competence of student teachers.

The percentage analysis showed that 80 (14.29%) of the student teachers has a 'Very High Teaching Competence' level, 141 (25.18%) of the student teachers has a 'High Teaching Competence' level, 165 (29.46%) of the student teachers has an 'Average Teaching Competence' level, 123 (21.96%) of the student teachers has a 'Low Teaching Competence' level, and 51 (9.11%) of the student teachers has 'Very Low Teaching Competence' level. Overall, 68.93% of student teachers has average and above level of Teaching Competence. It can be seen that the level of student teachers teaching competence mostly lies in 'Average' level indicating that student teachers had average level of teaching competence.

The present findings is in agreement with the findings of **Vasantha, S., & Ushalaya, R. D. (2016), Senthilmurugan, D., & Sivasakthi, R. D. (2019), Meenakumari, N., & Premalatha, T. (2021)** which reported that B.Ed. student teachers had average level of teaching competence.

Objective-2: To determine the level of Digital Literacy of student teachers.

The percentage analysis showed that 81 (14.5%) of the student teachers has 'Below Average' digital literacy level, 369 (65.9%) of the student teachers has 'Average' digital literacy level, and 110 (19.6%) of the student teachers has 'Above Average' digital literacy level. Overall, 85.5% of student teachers has average and above level of digital literacy. It can be seen that the level of student teachers digital literacy mostly lies in 'Average' level indicating that most of the student teachers had average level of digital literacy.

The present findings is in agreement with the findings of **Shakira, B. S., & Nagasubramani, P. C. (2017), Udhayakumar, P., & Pugalenthi, N. (2018), Senthilmurugan, D., & Sivasakthi, R. D. (2019)** which reported that B.Ed. student teachers had moderate level of ICT skills.

Objective-3: To determine the level of Leadership Skills of student teachers.

The percentage analysis showed that 91 (16.25%) of the student teachers has 'Below Average' leadership skills, 373 (66.61%) of the student teachers has 'Average' leadership skills, and 96 (17.14%) of the student teachers has 'Above Average' leadership skills level. Overall, 83.75% of student teachers has average and above level of leadership skills. It can be seen that the level of student teachers leadership skills score mostly lies in 'Average' level indicating that most of the student teachers had average level of leadership skills.

The present finding is in agreement with the finding of **Kannammal, R., & Pillai, J. (2018)** which reported that B.Ed. student teachers had moderate level of leadership traits.

Objective-4: To determine the level of Academic Achievement of student teachers.

The percentage analysis showed that 77 (13.75%) of the student teachers has 'Below Average' academic achievement level, 407 (72.68%) of the student teachers has 'Average' academic achievement level, and 76 (13.57%) of the student teachers has 'Above Average' academic achievement level. Overall, 86.25% of student teachers has average and above level of academic achievement. It can be seen that the level of student teachers academic achievement score mostly lies in 'Average' level indicating that most of the student teachers had average level of academic achievement.

The present findings is in agreement with the findings of **Fernandez, P., & Anandan, K. (2015), Kannammal, R., & Pillai, J. (2018), Deepa, K., & Saminathan, B. (2020)** which reported that B.Ed. student teachers had average level of academic achievement.

Objective-5: To compare mean scores of student teachers teaching competence with respect to gender.

Hypothesis-01: There is no significant difference in the mean scores of teaching competence between the groups of student teachers in terms of gender.

The result of the present study concluded that there was no significant difference in teaching competence between male and female student teachers. The overall mean scores for female was 144.26 and male was 142.03 respectively. It implicated that female student teachers have slightly better teaching competence than male student teachers. The calculated t-value (-1.27) further revealed that there is no significant difference in the mean scores of teaching competence between the groups of student teachers in terms of gender.

Several empirical studies (**Vimal & Kishor, 2020; Seshasree & Rao, 2002; Vasantha & Ushalaya, 2016; Mehta & Vashishth, 2020; Bharti & Prasad, 2022)** also concluded that no significant difference existed in teaching competence based on gender. This could be attributed to the fact that the level of motivation attached with teaching profession is equally imperative to both male and female student teachers. The Maslow theory of motivation also connotes that an individual motivation in bringing desired results induced them to achieve maximum growth leading to self actualization. However, the findings of the present study are in contrary with (**Senthilmurugan & Sivasakthi, 2019; Udhayakumar & Pugalenthi, 2018; Sasikala & Nirmala, 2017; Deepti & Sirohi, 2018**). These contradicting results could be explained by factors including gender experiences and variances in time and place, as well as social, ethnic, and cultural distinctions.

Further, no significant difference was found in all the teaching competence dimensions such as – Planning Lessons, Classroom Management, Knowledge of Subject, Interpersonal Relationships, Development of teaching learning material, Time management, Evaluation process during teaching learning, Competencies related to working with parents, community and other agencies among male and female student teachers as the calculated t-values were found to be lesser than the table t-value (1.96) for 558 df at 0.05 level of significance.

Objective-6: To compare mean scores of student teachers teaching competence with respect to age.

Hypothesis-02: There is no significant difference in the mean scores of teaching competence between the groups of student teachers in terms of age.

The result from the present study concluded no significant difference between student teachers of different age with regard to their teaching competence mean scores. Overall mean scores of student teachers teaching competence for below 30 years is 143.79 and 143.35 for 30 years and above. While comparing the mean scores for student teachers of below 30 years and 30 years & above, there was very slight difference indicating that student teachers of below 30 years have slightly better teaching competence than student teachers of 30 years and above.

The obtained result is in conformity with **Kumar, R. S., & Gnanasoundari, T. M. (2022)** and **Kumaran & Tamizhselvan (2024),** where their evidence revealed that there is no discernible variation in the B.Ed. trainees' teaching competency according to age group. It is assumed that the current findings resulted from the fact that all B.Ed. student teachers belonging to different age group may have similar level of professional commitment towards teaching. This could therefore have caused no effect on the student teachers teaching competence when compared with different age group. However, the result contradicts with the findings of (**Maji, P. K., 2022; Yuan, X., & Ye, Y., 2020; Senthilmurugan & Sivasakthi, 2019; Udhayakumar & Pugalenthi, 2018**) where their study concluded that age has an influence on the teaching competence of student teachers.

Further, no significant difference was found among student teachers of below 30 years and 30 years & above in the dimensions such as – Planning Lessons, Classroom Management, Knowledge of Subject, Interpersonal Relationships, Development of teaching learning material, Time management, Evaluation process during teaching learning, Competencies related to working with parents, community and other agencies, as the calculated t-values were found to be lesser than the table t-value (1.96) for 558 df at 0.05 level of significance.

Objective-7: To compare mean scores of student teachers digital literacy with respect to gender.

Hypothesis-03: There is no significant difference in the mean scores of digital literacy between the groups of student teachers in terms of gender.

Result from the present study indicated a significant difference in student teachers digital literacy scores based on gender. Overall mean scores of digital literacy of student teachers mean value for male is 30.30 and 27.34 for female indicating that mean scores of male were more than female student teachers. The overall calculated t-value was found to be 4.075 which was greater than the table t-value 1.96 at 0.05 level of significance.

Similar findings were reported by (**Bharti & Prasad, 2022; Udhayakumar & Pugalenthi, 2018; Sasikala & Nirmala, 2017; Singh & Mahejabin, 2023; Metha & Yadav, 2021**)**.** This disparity in digital literacy among gender could be attributed to societal values and beliefs attached to female individuals in a particular society where they are shouldered with household chores, cooking, and other social responsibilities. In such situational context where gender roles are duly emphasized on grounds of certain customs and beliefs will hamper the digital ability of an individual. Their participation in technology-related activities and behaviors would be reduced and might contribute to technology gender gap, despite the fact that technology has evolved at an exponential rate and penetrated every aspect of our lives. On the contrary the findings refute with (**Senthilmurugan & Sivasakthi, 2019; Sobha & Maikhuri, 2021; Yadav & Sarkar, 2021; Kumar & Selvam, 2018; Lavanya & Pattnaik, 2022**) which concluded no significant difference in digital literacy scores based on gender.

Further, it is evident that a significant difference was found among male and female student teachers in the digital literacy dimensions such as – Participation and understanding of digital practices, Access and integrate information, critically evaluate information, online interaction and online tools, Collaborate and share digital content, as the calculated t-values were found to be greater than the table t-value (1.96) for 558 df at 0.05 level of significance. However, one dimension of digital literacy viz. Manage and communicate information was found to be insignificant as the calculated t-value was found to be lesser than the table t-value (1.96) for 558 df at 0.05 level of significance.

Objective-8: To compare mean scores of student teachers digital literacy with respect to age.
Hypothesis-04: There is no significant difference in the mean scores of digital literacy between the groups of student teachers in terms of age.

The result from the present study concluded no significant difference between student teachers of different age with regard to their digital literacy mean scores. Overall mean scores of

student teachers digital literacy for below 30 years is 27.82 and 29.78 for 30 years and above. While comparing the mean scores for student teachers of below 30 years and 30 years & above, there was slight difference indicating that student teachers of 30 years & above have slightly better digital literacy than student teachers of below 30 years. Overall t-value was found to be 1.953 which is lower than the table t-value 1.96 for 558 df at 0.05 level of significance. It implicated that across all age groups all student teachers exhibited similar digital literacy scores.

The obtained result is in conformity with (**Lavanya & Pattnaik, 2022; Das, A. et al., 2023),** where their evidence revealed that the technological pedagogical skills of B.Ed. student teachers are not influenced by age. It is assumed that the current findings resulted from the fact that all B.Ed. student teachers belonging to different age group may have similar exposure to practical experiences of using technology in their everyday life. Moreover, with the advent of the internet and constantly advancing technology, teaching and learning is no longer confined to textbooks and classrooms alone. Moreover, the increased affordability and accessibility of internet might have led to improvement in the digital skills of an individual. This could therefore have caused no effect on the student teachers digital literacy when compared with different age group. However, the result contradicts with the findings of (**Senthilmurugan & Sivasakthi, 2019; Udhayakumar & Pugalenthi, 2018**) where their study concluded that age has an influence on the ICT skills of B.Ed. teacher trainees.

Further, no significant difference was found among student teachers of below 30 years and 30 years & above in all the digital literacy dimensions such as – Participation and understanding of digital practices, Access and integrate information, Critically evaluate information, online interaction and online tools, Manage and communicate information, Collaborate and share digital content, as the calculated t-values were found to be lesser than the table t-value (1.96) for 558 df at 0.05 level of significance.

Objective-9: To compare mean scores of student teachers leadership skills with respect to gender.

Hypothesis-05: There is no significant difference in the mean scores of leadership skills between the groups of student teachers in terms of gender.

The present study revealed that on student teachers leadership skills scores when compared with male and female was found to be insignificant. Overall mean scores of leadership

skills of student teachers when compared with gender the mean values for male and female are 132.35 and 132.73 respectively. While comparing the mean scores of male and female student teachers, there was slight difference indicating that female student teachers have slightly better leadership skills than the male student teachers. The overall t-value was also found to be 0.308 which is lesser than the table t-value (1.96) for 558df at 0.05 level of significance.

The findings of the present study correlate with (**Lotha & Babu, 2021; Paustian-Underdahi, S.C., et. al., 2014)** which concluded that gender do not differ in perceived leadership effectiveness. However, the findings of the study contradicts with (**Sheppard, 2018)** where it found that male students had higher level of leadership aspirations compared to female students. The results of this study may be attributed to the similarities in the level of confidence and leadership aspirations that student teachers demonstrate in their capacity to lead as leaders. Another possible reason could be the culture of the organization that encourages inclusive leadership positions and gives people the confidence to lead successfully despite traditional gender roles and stereotypes. The present findings are contrary to the expectations derived from patriarchal Naga society where it has favored men over women in terms of participation in decision making body owing to certain customary laws and practices. In particular, one would expect higher aspirations of leadership among male folks who are engaged more frequently in decision making roles. This was not evident from the present study hence further studies are needed to reaffirm the findings of the present study.

Further, no significant difference was found among male and female student teachers in the leadership skills dimensions such as – Effectiveness, Autonomy, Collegiality, and Vision, as the calculated t-values were found to be lesser than the table t-value (1.96) for 558 df at 0.05 level of significance. However, a significant difference was found among male and female student teachers in the dimensions – Risk Taking, and Ethics as the calculated t-values were found to be greater than the table t-value (1.96) for 558 df at 0.05 level of significance.

Objective-10: To compare mean scores of student teachers leadership skills with respect to age.
Hypothesis-06: There is no significant difference in the mean scores of leadership skills between the groups of student teachers in terms of age.

The findings concluded a significant difference between student teachers of different age with regard to their leadership skills mean scores. Overall mean scores of leadership skills of

student teachers with respect to age showed mean scores of 131.97 for below 30 years and 138.22 for 30 years and above indicating that leadership skills of student teachers for 30 years & above were more than below 30 years. The obtained result is in conformity with **Varghese & Chandrashekar (2021),** whose evidence concluded age has an influence on teacher leadership competency in secondary schools. It is assumed that the current findings resulted from the fact that older student teachers might have varied experiences and knowledge in their life which enhanced their leadership abilities. With age, a variety of things contribute to individuals' experience and knowledge such as time, exposure to various situations and mistakes, mentorship, and coaching. These factors might have contributed to enhance their leadership skills which led to insignificant difference between student teachers of different age on their leadership skills. However, the result contradicts with the findings of **Lotha & Babu (2021),** where their study revealed that age has no influence on the educational leadership of secondary school teachers.

Further, a significant difference was found among student teachers of below 30 years and 30 years & above in the leadership skills dimensions such as – Risk Taking, Effectiveness, Collegiality, and Vision, as the calculated t-values were found to be greater than the table t-value (1.96) for 558 df at 0.05 level of significance. However, no significant difference was found among student teachers of below 30 years and 30 years & above in the dimensions – Autonomy and Ethics as the calculated t-values were found to be lesser than the table t-value (1.96) for 558 df at 0.05 level of significance.

Objective-11: To compare mean scores of student teachers academic achievement with respect to gender.

Hypothesis-07: There is no significant difference in the mean scores of academic achievement between the groups of student teachers in terms of gender.

The present study revealed a significant difference in their academic achievement scores when compared with male and female student teachers. The mean value for male and female student teachers was 62.75 and 65.70 respectively. It showed that female student teachers performed slightly better than the male student teachers when their academic achievement scores were compared.

The findings of the present study correlate with (**Deepa & Saminathan, 2020, Geethadevi & Kalaimathi, 2019, Kumar & Selvam, 2018, Illahi & Khandai, 2015, Sujata &**

Reddy, 2011, Thangam & Natesan, 2009) where it reported that significant difference exists between male and female student teachers with regard to their academic achievement scores. The findings contradict with (**Singh & Mahejabin, 2023, Yaden & Rai, 2022, Kaur et. al. 2015, Arumugam, G, 2014, Bhati, K., et. al. 2022**) where it found that gender has no significant influence on academic achievement of student teachers. The findings in the present study might be because, in the modern era, both male and female student teachers have access to equal opportunity in all fields. Nowadays, women are more conscious of their opportunities and rights due to increase in awareness about importance of gender equality and empowerment. The traditional society that has historically favored men over women in terms of access to education, career opportunities, and decision-making authority is gradually changing to recognize women's equal contribution to the advancement and progress of a country. As a result, a significant difference between the academic achievement of male and female student teachers have been identified in the present study.

Objective-12: To compare mean scores of student teachers academic achievement with respect to age.

Hypothesis-08: There is no significant difference in the mean scores of academic achievement between the groups of student teachers in terms of age.

The result from the present study concluded no significant difference between student teachers of different age with regard to their academic achievement mean scores. The overall mean scores of academic achievement of student teachers with respect to age showed mean values of 64.98 for below 30 years and 65.22 for 30 years & above. While comparing the mean scores for student teachers of below 30 years and 30 years & above, there was slight difference indicating that student teachers of 30 years & above have slightly better academic achievement than student teachers of below 30 years. The calculated t-value (0.176) was also found to be lower than the table t- value (1.96) for 558df at 0.05 level of significance.

The obtained result is in conformity with **Lydiah, N. W., & Emeke, E. A. (2019),** whose evidence revealed that age has no influence on academic performance. It is assumed that the current findings resulted from the fact that all B.Ed. student teachers belonging to different age group may have similar level of pedagogical content knowledge. It is thus assumed that all the student teachers have strong understanding on the philosophy, psychology and sociology

perspectives of education. This could therefore have caused no effect on the student teachers academic achievement when compared on the basis of their age. However, the findings are contrary to **Deepa & Saminathan (2020), Sujata & Reddy (2011),** whose findings concluded that age has significant influence on the academic achievement of B.Ed. students.

Objective-13: To study the influence of student teachers educational qualification on teaching competence**.**

Hypothesis-09: There is no significant influence of student teachers educational qualification on teaching competence.

The result from the present study indicated no significant influence in teaching competence based on educational qualification. The overall computed value of "F" for teaching competence (0.352) is lesser than the critical value of "F" (3.087) for 2 and 557 df at 0.05 level of significance.

The results of (**Seshasree & Rao, 2002; Vasantha & Ushalaya, 2016; Mehta & Vashishth, 2020; Sasikala & Nirmala, 2017**) showing no significant difference in student teachers teaching competence based on educational qualification are supported by the current study. However, the findings of (**Senthilmurugan & Sivasakthi, 2019; Udhayakumar & Pugalenthi, 2018; Yuan, X., & Ye, Y., 2020**) contradicts with the findings of the present study where it concluded significant difference in teaching competency among B.Ed. trainees based on their educational qualification. The findings in the present study might be because all the student teachers possess the same pedagogical content knowledge despite variations in their academic background. The student teachers might have possessed same knowledge on what they know about teaching and what they teach. As a result, no discernible differences in the teaching competence of student teachers on grounds of educational qualification have been identified in the present study.

In the present study no significant influence was found among all the various dimensions (Planning Lessons, Classroom Management, Knowledge of Subject, Interpersonal Relationships, Development of teaching learning material, Time management, Evaluation process during teaching learning, and Competencies related to working with parents, community and other agencies) of teaching competence based on educational qualification.

Objective-14: To study the influence of student teachers pedagogy on teaching competence**.**

Hypothesis-10: There is no significant influence of student teachers pedagogy on teaching competence.

The result from the present study concluded no significant influence in the overall teaching competence among student teachers of Nagaland based on their pedagogy. The overall computed value of "F" for teaching competence (1.129) is lesser than the critical value of "F" (2.696) for 3 and 556 df at 0.05 level of significance.

The findings in the present study might be because all the student teachers belonging to different pedagogy have favorable attitude towards teaching. As a result, no significant differences in teaching competence among student teachers based on their pedagogy have been identified in the present study. However, to the best of the researcher's understanding after reviewing the relevant literature no empirical study addressing this variable has been found. Therefore, similar and contrary literature pertaining to this variable is delimited in the present study. In this regard, further studies pertaining to the variable is needed to revalidate the present findings.

The study also found no significant influence among the various dimensions (planning lessons, classroom management, knowledge of subject, development of teaching learning material, time management, evaluation process during teaching learning, and competencies related to working with parents, community and other agencies)of leadership skills based on educational qualification. However, one dimension 'Intrapersonal relationship' was found to be significant among student teachers of Nagaland based on their pedagogy.

Objective-15: To study the influence of student teachers educational qualification on digital literacy.

Hypothesis-11: There is no significant influence of student teachers educational qualification on digital literacy.

The result from the present study indicated a significant influence in digital literacy based on educational qualification. The overall computed value of "F" for digital literacy score (4.437) is greater than the critical value of "F" (3.087) for 2 and 557 df at 0.05 level of significance.

This result is supported by the findings of **Lavanya & Pattnaik (2022); Senthilmurugan& Sivasakthi (2019)**, **Udhayakumar & Pugalenthi (2018), and Sasikala &**

Nirmala (2017). The obtained result in the study may be due to wider context of knowledge, better understanding and vast experience of digital skills among PG student teachers in comparison to UG and Others. Research also indicates that lifelong learning tendency of an individual enriches individual skills and proficiencies. It is possible that lifelong learning tendencies of PG student teachers are high as compared to others, as a result significant difference in digital literacy scores have been identified in the present study. However, the study contradicts with **Yadav & Sarkar (2021), Metha & Yadav (2021)** whose evidence concluded that prospective teachers irrespective of educational qualification have similar attitude towards ICT.

Further, a significant influence was also found among the various dimensions (Access and integrate information and Collaborate and share digital content) of digital literacy based on educational qualification. However, no significant difference was found on the dimensions - Participation and understanding of digital practices; Critically evaluate information, online interaction and online tools; and Manage and communicate information of digital literacy based on educational qualification.

Objective-16: To study the influence of **student teachers** pedagogy on digital literacy.
Hypothesis-12: There is no significant influence of student teachers pedagogy on digital literacy.

The result from the present study concluded no significant influence in the overall digital literacy scores among student teachers of Nagaland based on their pedagogy.

The obtained result is in conformity with (**Meher, V., et al., 2020**) where their evidence concluded no discernible difference between the mean attitude scores of science and art teachers, between art and commerce teachers, and between science and commerce teacher on the use of ICT in teaching learning process. It is assumed that the current findings resulted from the fact that all B.Ed. students teachers, whether pre-service or in-service trainee understands that integration of technology in teaching enhance pupil learning experience. The digital knowledge and skills of teachers is duly emphasized in education especially after the pandemic havoc. In this regard, (**Dervenis, C., et al., 2022; Mercè Gisbert Cervera & Francesca Caena, 2022**) also asserted that specific competences like digital competence of teachers have recently become of significant importance worldwide due to the COVID-19 pandemic. This might have led student teachers to adapt to this new mode of teaching through their prior experiences which led

to improvement in their digital skills and knowledge. However, the finding contradicts with (**Singh & Mahejabin (2023); Metha & Yadav (2021)** where their study showed no significant difference in the attitude of prospective teachers towards ICT based on pedagogy.

The study also found a significant influence among the various dimensions (Participation and understanding of digital practices, and Access and integrate information) of digital literacy based on educational qualification. However, no significant difference was found on the dimensions - Critically evaluate information, online interaction and online tools; Manage and communicate information; and Collaborate and share digital content of digital literacy based on educational qualification.

Objective-17: To study the influence of student teachers educational qualification on leadership skills.

Hypothesis-13: There is no significant influence of student teachers educational qualification on leadership skills.

The result from the present study concluded no significant influence in the overall leadership skills scores among student teachers of Nagaland based on their educational qualification. The overall computed value of "F" for leadership skills (1.295) is lesser than the critical value of "F" (3.087) for 2 and 557 df at 0.05 level of significance.

The obtained result is in conformity with **(James & Suman, 2021**) whose evidence showed no significant difference in the leadership of prospective teachers based on educational qualification. The current conclusion could be attributed to the fact that student teachers from any educational background may have the same level of confidence and leadership aspirations to lead in any situation. This could therefore have caused no effect on the student teachers leadership skills.

In the present study no significant influence was found among all the various dimensions - Risk Taking; Effectiveness; Autonomy; Collegiality; Ethics; and Vision of leadership skills based on educational qualification.

Objective-18: To study the influence of student teachers pedagogy on leadership skills.

Hypothesis-14: There is no significant influence of student teachers pedagogy on leadership skills.

The findings concluded a significant influence in the overall leadership skills scores among student teachers based on their pedagogy. The overall computed value of "F" for leadership skills (4.815) is greater than the critical value of "F" (2.696) for 3 and 556 df at 0.05 level of significance.

It is assumed that the current findings resulted from the fact that all B.Ed. student teachers belonging to any pedagogy may have different aspirations in their leadership abilities. As a result, it might have caused a significant difference in leadership skills among student teachers based on their pedagogy. However, to the best of the researcher's understanding after reviewing the relevant literature no empirical study addressing this variable has been found. Therefore, similar and contrary literature pertaining to this variable is delimited in the present study. In this regard, further studies pertaining to the variable is needed to revalidate the present findings.

The study also found a significant influence among various dimensions (Risk taking, Effectiveness, Autonomy, and Ethics) of leadership skills based on pedagogy. However, the dimensions (Collegiality, and Vision) of leadership skills were found to be insignificant based on pedagogy.

Objective-19: To study the influence of student teachers educational qualification on academic achievement.

Hypothesis-15: There is no significant influence of student teachers educational qualification on academic achievement.

The findings concluded a significant influence of student teachers educational qualification on academic achievement. The mean scores of academic achievement of student teachers with respect to educational qualification showed 62.88 for U.G., 66.35 for P.G., and 64.93 for Others. It indicated that the academic achievement of P.G. educational qualification student teachers were better than U.G. and Others educational qualification student teachers. The calculated "F" value (7.985) was also found to be greater than the critical value of "F" (3.087) for 2 and 557 df at 0.05 level of significance.

The obtained result is in conformity with (**Deepa & Saminathan, 2020; Geethadevi & Kalaimathi, 2019; Sujata & Reddy, 2011**) whose evidence concluded that academic achievement of B.Ed. students is significantly influenced by their educational qualification. The

findings in the present study might be because all the student teachers belonging to different educational qualification might possess different educational aspirations in achieving their goals. Moreover, due to increasing demand for well informed competent individuals it has led to cut threat competition in the labor market. In such context, every individual will aspire to give their best in order to participate successfully in the labor market to get employment. As a result, it might have caused a significant difference in academic achievement among student teachers based on their educational qualification.

Objective-20: To study the influence of student teachers pedagogy on academic achievement.
Hypothesis-16: There is no significant influence of student teachers pedagogy on academic achievement.

The result from the present study concluded no significant influence of student teachers pedagogy on academic achievement. The mean scores of academic achievement of student teachers with respect to pedagogy showed of 64.29 for Pedagogy of English, 67.88 for Pedagogy of Mathematics, 65.89 for Pedagogy of Science, and 64.52 for Pedagogy of Social Studies opted student teachers. It indicated that the academic achievement of student teachers belonging to Pedagogy of Mathematics was slightly better than Pedagogy of English, Pedagogy of Science, and Pedagogy of Social Studies opted student teachers. The calculated "F" value (2.376) was also found to be lesser than the critical value of "F" (2.696) for 3 and 556 df at 0.05 level of significance.

The obtained result is in conformity with (**Bhati, K., et. al., 2022**)**,** where their study showed that educational streams had no discernible impact on undergraduate students' academic achievement. It is assumed that the current findings resulted from the fact that all B.Ed. student teachers belonging to different pedagogy may have similar level of pedagogical content knowledge. Moreover, every B.Ed. institutes in Nagaland follows identical curriculum where every student teachers across all pedagogy undergoes strong foundational course on teaching. It is thus assumed that all the student teachers have strong understanding on the philosophy, psychology and sociology perspectives of education. This could therefore have caused no effect on the student teachers academic achievement when their pedagogy was compared in the study. However, the finding contradicts with (**Singh & Mahejabin, 2023; Sujata & Reddy, 2011),**

where their study showed that pedagogy have significant influence on the academic achievement of B.Ed. students.

Objective-21: To study the correlation between teaching competence and digital literacy of student teachers.

Hypothesis-17: There is no significant relationship between teaching competence and digital literacy of student teachers.

The present study found that there is a low positive correlation and also there is a significant correlation between teaching competence and digital literacy of student teachers. This implicated that student teachers with higher teaching competence would also possess higher digital literacy and vice-versa.

This evidence is supported by the findings of **Bharti & Prasad (2022), Singh & Singh (2019), Udhayakumar & Pugalenthi (2018), Sasikala & Nirmala (2017),** where their study found that there is association between teaching competence and digital literacy of student teachers. It is assumed that the current findings resulted from the fact the teaching competence of student teachers depends on their digital literacy skills. Hence, a positive association was found between these two variables.

Objective-22: To study the correlation between teaching competence and leadership skills of student teachers.

Hypothesis-18: There is no significant relationship between teaching competence and leadership skills of student teachers.

The present study found that there is a low positive correlation and also there is a significant correlation between teaching competence and leadership skills of student teachers. This implicated that student teachers with higher teaching competence would also possess higher leadership skills and vice-versa.

This evidence is supported by the findings of **Singh & Singh (2019),** where it concluded that teaching competence and inspirational leadership of prospective teachers were positively correlated. It is assumed that the current findings resulted from the fact that teaching competence of student teachers depends on their leadership skills. Hence, a positive association was found between these two variables.

Objective-23: To study the correlation between teaching competence and academic achievement of student teachers.

Hypothesis-19: There is no significant relationship between teaching competence and academic achievement of student teachers.

The present study found that there is a weak correlation and also there is no significant correlation between teaching competence and academic achievement of student teachers. This evidence is supported by the findings of **Vecaldo, R., et. al., (2017),** where their evidence revealed that the academic achievement of pre-service primary teachers is not significantly correlated with their level of pedagogical competence.

It is assumed that the current findings resulted from the fact that teaching competence of individuals does not determine their academic performance. Various psychological characteristics, such as attitude, beliefs, dedication, and values, can have an impact on an individual's capacity to teach and improve their teaching skills. As a result, no significant association was found between these two variables. However, contrary to this finding **Fabelico, F. L. & Afalla, B. T. (2023),** reported that pre-service teachers' academic achievement and their pedagogical skills were found to be significantly correlated.

Objective-24: To study the correlation between digital literacy and leadership skills of student teachers.

Hypothesis-20: There is no significant relationship between digital literacy and leadership skills of student teachers.

The present study found that there is a low positive correlation and also there is a significant correlation between digital literacy and leadership skills of student teachers. It is assumed that the current findings resulted from the fact that digital literacy of student teachers depends on their leadership abilities. Hence, a positive association was found between these two variables.

However, to the best of the researcher's understanding after reviewing the relevant literature no empirical study addressing this variable has been found. Therefore, similar and contrary literature pertaining to this variable is delimited in the present study. In this regard, further studies pertaining to the variable is needed to revalidate the present findings.

Objective-25: To study the correlation between digital literacy and academic achievement of student teachers.

Hypothesis-21: There is no significant relationship between digital literacy and academic achievement of student teachers.

The present study found that there is a weak and negligible correlation and also there is no significant correlation between digital literacy and academic achievement of student teachers. This evidence is supported by the findings of **Lavanya & Pattnaik (2022),** but the findings are contrary with the findings of **Singh & Mahejabin (2023), Kumar & Selvam (2018), Faizan Ali., et. al., (2024), Ting Yin., et. al., (2023).**

It is assumed that the current findings resulted from the fact that digital literacy of individuals does not determine their academic performance. Hence, no significant association was found between these two variables.

Objective-26: To study the correlation between leadership skills and academic achievement of student teachers.

Hypothesis-22: There is no significant relationship between leadership skills and academic achievement of student teachers.

The present study found that there is a weak correlation and also there is no significant correlation between leadership skills and academic achievement of student teachers. This evidence is supported by the findings of **Dipali, P., & Shikare, A. P. (2016),** which concluded that no significant relationship exist between B.Ed. students' leadership behavior qualities and their academic achievement.

It is assumed that the current findings resulted from the fact that leadership skills of an individual do not determine their academic performance. As a result, no significant association was found between these two variables.

Objective-27: To study the joint contribution of digital literacy and leadership skills in predicting teaching competence of student teachers.

Hypothesis-23: There is no significant joint contribution of digital literacy and leadership skills in predicting teaching competence of student teachers.

The present study revealed that there was a low moderate significant joint contribution of digital literacy and leadership skills in predicting teaching competence of student teachers. The present study found that independent variables such as digital literacy and leadership skills helped in predicting the criterion variable i.e. teaching competence. The findings are in conformity with **Singh & Singh (2019),** where it concluded that digital literacy and inspirational leadership (independent variables) are associated with teaching competence (dependent variable).

It is assumed that the current findings resulted from the fact that digital literacy and leadership skills together determine the teaching competence of student teachers.

Objective-28: To study the joint contribution of digital literacy and academic achievement in predicting teaching competence of student teachers.

Hypothesis-24: There is no significant joint contribution of digital literacy and academic achievement in predicting teaching competence of student teachers.

The present study concluded that there was a low significant joint contribution of digital literacy and academic achievement in predicting teaching competence of student teachers. The present study found that independent variables such as digital literacy and academic achievement helped in predicting the criterion variable i.e. teaching competence.

It is assumed that the current findings resulted from the fact that digital literacy and academic achievement together determine the teaching competence of student teachers. However, to the best of the researcher's understanding after reviewing the relevant literature no empirical study addressing this variable has been found. Therefore, similar and contrary literature pertaining to this variable is delimited in the present study. In this regard, further studies pertaining to the variable is needed to revalidate the present findings.

Objective-29: To study the joint contribution of leadership skills and academic achievement in predicting teaching competence of student teachers.

Hypothesis-25: There is no significant joint contribution of leadership skills and academic achievement in predicting teaching competence of student teachers.

The present study concluded that there was a low moderate significant joint contribution of leadership skills and academic achievement in predicting teaching competence of

student teachers. The present study found that independent variables such as leadership skills and academic achievement helped in predicting the criterion variable i.e. teaching competence.

It is assumed that the current findings resulted from the fact that leadership skills and academic achievement together determine the teaching competence of student teachers. However, to the best of the researcher's understanding after reviewing the relevant literature no empirical study addressing this variable has been found. Therefore, similar and contrary literature pertaining to this variable is delimited in the present study. In this regard, further studies pertaining to the variable is needed to revalidate the present findings.

Objective-30: To study the joint contribution of digital literacy, leadership skills and academic achievement in predicting teaching competence of student teachers.

Hypothesis-26: There is no significant joint contribution of digital literacy, leadership skills and academic achievement in predicting teaching competence of student teachers.

The present study concluded that there was a low moderate significant joint contribution of digital literacy, leadership skills and academic achievement in predicting teaching competence of student teachers. The present study found that independent variables such as digital literacy, leadership skills and academic achievement conjointly contributed in predicting the teaching competence.

It is assumed that the current findings resulted from the fact that digital literacy, leadership skills and academic achievement conjointly determine the teaching competence of student teachers. However, to the best of the researcher's understanding after reviewing the relevant literature no empirical study addressing this variable has been found. Therefore, similar and contrary literature pertaining to this variable is delimited in the present study. In this regard, further studies pertaining to the variable is needed to revalidate the present findings.

5.4. Educational Implications

Some few implications are suggested based on the findings of the present study with the hope to improve the secondary teacher education programmes in Nagaland.

1. The professional preparation and nurturing of teachers is of paramount importance in context of ensuring quality education for all. The design of teacher training programs should guarantee that aspiring student teachers are equipped with the necessary

knowledge and skills on teaching as they prepare to enter the real teaching profession. It is recommended that through quality enriched curriculum all teacher education institutions should help student teachers to develop a strong understanding on the philosophy, psychology and sociology perspectives of education.

2. The overall mean scores indicated that female student teachers had higher teaching competence than male student teachers. Studies indicated that teachers' attitude towards teaching influence the teaching competence (Vimal & Kishor, 2020; Jain. R., 2007). The attitude of an individual exerts influence towards 'specific objects' driving a person to behave in certain ways which could be either positive or negative. A change in mindset and desirable attitude towards teaching among male teachers can be developed if teaching profession like any other profession is accorded with higher status in the society which in turn will foster better teaching competence.
3. The disparity in digital literacy among gender need to be reduced to ensure that female student teachers equally participate in technology related activities in their home and colleges. Rashid (2016), in this regard also claimed that the root cause of digital inequality among gender was socioeconomic inequality. Hence, all responsible stakeholders must ensure to bring a change in mindset by promoting gender equality and empowerment.
4. An individual lifelong learning tendency enables him/her to enrich their knowledge, skills, capabilities etc. keeping him/her well informed and up to date in a knowledge driven society. The lifelong learning tendency of student teachers can be developed by teacher education institutions through quality enriched curriculum and comprehensive improvement of the teacher training programmes.
5. The study revealed that significant difference exists in the overall leadership skills mean scores among student teachers based on their pedagogy. Since, research confirms that teacher leadership improve teaching learning quality (Nguyen et al., 2019), a conducive organizational climate that encourages decision-making in raising educational issues should be encouraged in fostering confidence among student teachers to act as agents of change in society.
6. Teacher leaders play a number of roles and duties in raising the bar for best practices in schools, and their position is seen as essential since they take part in a wide range of

activities to achieve the objectives of education. Thus, it is recommended that teacher education institutions designed a curriculum on teacher leadership to help student teachers acquire the critical skills in effectively managing their professionalism within the school and community.

7. With the emergence of technology adapting and integrating technology in classroom is equally imperative to diligent educators, as the learning environment, both offline and online, will continue to progress over time. It has manifested profound modification in the teaching and learning process as access to digital media has increased exponentially where new opportunities and challenges continues to evolve in education sector. Thus, student teachers need to develop the requisite skills and competence to effectively handle digital tools in ICT based education to maximise learning outcomes. A workshop cum training programme supported by various government and non-government agencies in collaboration with Universities, CIET, NCERT etc. demonstrating the various features of the new and emergent developments of technology in teaching and learning will help the student teacher to improve their digital literacy and increase their awareness.
8. Since the teachers' curriculum is considered a key tool for achieving the National Curriculum Framework's objectives, effort should be made by teacher education institutions to provide generalized information on the subject of ICT in B.Ed. programmes through quality enriched curriculum by incorporating all the essential topics on digital literacy. This will enable student teachers to gain better access to resources and information for continuing professional development, better teaching, learning, evaluation, and tracking, and higher levels of productivity. Besides, hands on training with better ICT lab and infrastructure, and access to technology is required to improve the digital competence of student teachers. Further, student teachers should be equipped with requisite knowledge and skills through capacity training programmes to critically evaluate online information through ethical usage of technology to prevent potential online risks.
9. A significant relationship between teaching competence and digital literacy was found among student teachers. With emerging developments of various e-learning tools in educational institutions teachers need to develop specific competencies to accommodate this new way of teaching. The Technological Pedagogical Content Knowledge (TPACK)

framework also describes the kinds of knowledge required by teachers for the successful integration of technology in teaching to improve learning outcomes. Thus, it is evident that understanding of TPACK and reasonable use of ICT for teaching and learning must be included in teacher training programs to provide comprehensive knowledge on the subject.

10. It is evident from the findings that joint contribution of digital literacy and leadership skills helped in predicting teaching competence of student teachers. Teaching is a multifaceted activity that requires an integrated set of skills and abilities to perform well in any situation. The significance of producing qualified, competent, and committed teachers with all the essential pedagogical and content knowledge and skills are prerequisite for teacher education institutions through high-quality content and training.

5.5. Suggestion for Further Research

- The study was limited to Nagaland state. Similar studies can be taken up in neighboring north eastern states to revalidate the findings of the present study.
- Teaching competence can be studied by associating with other variables like self efficacy, emotional intelligence, and academic motivation.
- Further studies can be taken up on teaching competence among teacher educators, university teachers, and elementary school teachers to compare the findings of the present study.
- Teaching competence of student teachers is influenced by variety of factors such as organizational climate, quality and organization of teacher education programmes, field experiences or internship, co-ordination between university and affiliated teacher education colleges etc. Hence, study can be conducted on these aspects that impact teaching competence of teachers.
- A study on development of curriculum for teacher leadership of student teachers can be carried out.
- A similar study can be undertaken in Nagaland after implementation of 4 year B.Ed. programme to compare with the findings of the present study.

5.6. Conclusion

The present study made an attempt to study the teaching competence of student teachers by associating with the construct digital literacy, leadership skills and academic achievement. It also analyzed the teaching competence, digital literacy, leadership skills, and academic achievement based on various socio-demographic profiles (gender, educational qualification, pedagogy, and age) to gain better understanding of the characteristics of the population. Furthermore, it is assumed that the findings of the study will help teacher education institutions to increase awareness on importance of incorporating various skills in classrooms such as - teaching competence, digital literacy, and leadership skills among student teachers through introduction of comprehensive in-service programmes and quality enriched curriculum. The skills and competence of future teachers is inevitable and will serve as the basis to deliver quality education in the classroom.

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NAGALAND UNIVERSITY
(A Central University Established by the Act of Parliament, 35/1989)
Department of Teacher Education
Nagaland University
Kohima Campus, Meriema, Kohima- 797 004

To **16-08-2022**

……
……
……

Sub: Permission for data collection (Third Semester)-B.Ed.-Student Teachers – Ph.D.Work-Requested-Regarding.

Respected Sir/Madam,

With the subject cited above, **W. Yanponi Kithan(Reg.No: Ph.D./TED/00399)**, Research Scholar, Dept of Teacher Education, Nagaland University currently pursuing Ph.D. under my supervision on **"Teaching Competence of Student Teachers in Relation to Their Digital Literacy, Leadership Skills and Academic Achievement."**

In this regard I am requesting your kind authorities to provide the information about the number of B.Ed. student teachers (Third Semester) and also kindly allow her to collect the data from the B.Ed. student teachers without affecting your classes and activities and etc.

B.Ed.	**Gender**		**Type of Trainee**		**Pedagogy of Teaching**			
Third Semester	Male	Female	In-Service	Pre-Service	English	Maths	Science	Social Studies

I am requesting you to cooperate and help for the smooth and successful completion of this work.

Thanking You

Yours faithfully,

Dr. M.Rajendra Nath Babu
Assistant Professor (Senior Scale)
Department of Teacher Education
09440858111, 09402207563

NAGALAND UNIVERSITY
(A Central University Established by the Act of Parliament, 35/1989)
Department of Teacher Education
Nagaland University
Kohima Campus, Meriema, Kohima- 797 004

Dear Sir/Madam,

I am working on the research study entitled **"Teaching Competence of Student Teachers in Relation to Their Digital Literacy, Leadership Skills and Academic Achievement"** under the supervision of **Dr. M. Rajendra Nath Babu, Assistant Professor** [Senior Scale], Department of Teacher Education, Nagaland University, Meriema, Nagaland. The present research tool is constructed to assess the Teaching Competence of Student Teachers in Relation to Their Digital Literacy, Leadership Skills and Academic Achievement in Nagaland State. In this regard, I would like to request your kind participation by sharing your valuable views to the set of each questionnaire. Keeping in mind the privacy ethics of an individual, I assure you that the information provided will be kept confidential and shall be utilized solely for the purpose of research study.

Thank You Very Much for your cooperation.

Personal data sheet

Roll Number (University)	**:**	
Gender	**:**	Male ( ) / Female( )
Education Qualification	**:**	U.G. ( ) / P.G.( ) / Others( )
Pedagogy of Teaching	**:**	English ( ) / Mathematics( ) / Science( ) / Social Studies( )
Age	**:**	Below 30 years ( ) / 30-40 years( ) / 40 years and above( )

I will follow all the ethical aspects for my Research work.

Thanking you

Yours faithfully,

W.Yanponi Kithan
Research Scholar
Department of Teacher Education
Nagaland University, Meriema

Digital Literacy Questionnaire

Kindly read each statement carefully and respond frankly to the options (YES / NO) that suits your opinion.

1. I know how to connect larger monitor like Multimedia Projector.
2. I know how to take a print out.
3. I know how to scan images.
4. I am aware of the safety issues related to the computing environment.
5. I know about computer security such as copyright.
6. I know how to secure my digital information.
7. I know how to locate files on computer system.
8. I know how to communicate to anyone online.
9. I easily connect online to people of same interest area.
10. I am aware of ethical issues related to online information retrieval.
11. I can use web browsers easily.
12. I can save content from web pages.
13. I can communicate through e-mail messages.
14. I can attach files to outgoing e-mails.
15. I can refine online search by using advanced search options.
16. I know how to use online library.
17. I can use word editing options easily.
18. I can work effectively with spreadsheet package like excel.
19. I can present spread sheet data graphically.
20. I can filter data in spread sheets.
21. I can introduce animation into slides.
22. I can assess the authenticity of the online resource.
23. I can keep a digital record of the relevant information I find online using different technologies.
24. I can assess whether an instance of online collaborative working has been effective and appropriate.
25. I use appropriate quality criteria to filter results for obtaining the most relevant information within documents.
26. I can evaluate web information critically.
27. I can create easily readable information online.
28. I can tag my information online for quick retrieval.
29. I can chat on the internet using instant messaging tools.
30. I use suitable methods for managing a large volume of information.
31. I can easily manage bookmarks in any document.
32. I can communicate information online using various tools.
33. I can cite online reference correctly.
34. I can share files online with others.
35. I can exchange online videos easily.
36. I can collaborate with people using blogs.
37. I can share digital content using file exchange applications.
38. I can access social media sites for exchanging subject-related content.
39. I can publish subject related content in multimedia format.

Teaching Competence Scale

Kindly read each statement carefully and click the option that suits your views on given Five alternatives viz., **Most of the time, Often, Rarely, Sometimes, Not at all.**

1. I plan the lesson keeping in mind the objectives of the lesson.
2. I plan activities and guide pupils to learn by doing.
3. I plan and guide pupils in accomplishing innovative activities.
4. I select the content to be taught according to the age of my students.
5. I adopt new strategies to cater the needs of pupils.
6. I am fully thorough in construction of objectives and test items in difficulty levels.
7. I plan strategies to deal with tough topics.
8. I am able to provide wide range of variety of learning activities to pupils.
9. I consider needs and interests of pupils in the preparation of relevant supporting materials at low cost and no cost.
10. My focus while teaching is towards whole class and not towards a section of class.
11. Group dynamics of my class is always in my knowledge.
12. I encourage faculty interaction for better academic growth.
13. According to me, Evaluation criteria should not pressurize the abilities of the pupils.
14. I use different types of evaluation techniques.
15. I make pupils realize the significance of graded assignments for evaluation.
16. I think pupils progress should always be discussed with the parents.
17. I take out time to deal with parental queries.
18. I never comment on any particular part of society.
19. While teaching, developing the feeling of unity among pupils is my main concern.
20. I manage time and space properly for the display of teaching learning materials.
21. I invite new practices innovated by others and implement such novel concepts in teaching.
22. I always try to keep pupils alert and enthusiastic.
23. I encourage students to fabricate relevant content with appropriate methodology.
24. I think parents' role is very important in the education of the child.
25. I adopt appropriate remedial measures.
26. I encourage maximum participation of pupils in my class.
27. New topics are always based on previous knowledge of pupils in my class.
28. I give due weightage to classroom observation for evaluation.
29. I always come on time so that my pupils also follow punctuality and regularity.
30. I apply the assessment criteria of the activities as established in the subject curriculum.
31. I attend and respond clearly to questions asked by pupils in my class.
32. I design and relates the classroom content to the real-life situations.
33. I appreciate the creative ability of the pupils in preparation of suitable teaching materials.
34. I use questioning technique to develop critical awareness among pupils.
35. I use different strategies after identifying learning difficulties of pupils.

First draft

LEADERSHIP SKILLS QUESTIONAIRRE

[Note **-*** indicates the negative statements]

S.No.	Items
1	I'm willing to try new teaching strategies in the classroom for effective learning outcomes.
2	I'm confident in my credibility to make the right decision.
3	I'm interested and willing to take charge of a group of people.
4*	I'm hesitant to take charge when confronted with leaderless situation.
5	I'm willing to influence others.
6	I'm driven to achieve the desired goals that I have established.
7	I enjoy setting and meeting challenging targets for pupils and the school.
8	I try to stay focus on my goals despite interference.
9*	I find difficulty in concentrating on my goals when there is interference.
10	I encourage and motivate pupils in the learning process.
11	I see learning as an essential part of my professional life
12*	I'm hesitant when suggested to attain formal training
13	I know the subject I teach and how to teach those subjects to students
14	I select appropriate teaching aids that is available and relevant to students age, ability and interest
15	I evaluate my practice in terms of pupil performance.
16	I like to work with technical equipments and incorporate in classroom to make learning fun and enjoyable.
17*	I feel uneasy while handling new technical apparatus in the classrooms.
18	I can easily mingle and meet others in a variety of work situations.
19	I like to figure out people's feeling, attitudes and motives
20	I try to understand things from others perspectives.
21	I initiate to design school curriculum.
22	I make my own decisions in areas related to my work.
23	I take steps for school improvement plans and innovation.
24	I take decision on how to address the goals and standards of the school.
25	Teachers should be allowed to make one's own educational decisions.

26	I make my own choices about school curriculum.
27*	Helping with school improvements plans does not concern me
28	I'm responsible for monitoring student progress and development.
29*	I'm not concern about reflecting my teaching practice.
30	I enjoy working closely with my colleagues.
31	I help colleagues overcome problems that stop them from carrying out their tasks.
32	I get along well with the members of my group.
33*	I'm hesitant to discuss teaching strategies with my peers.
34	I like to share learning materials with my peers.
35	I value participation from every individual where their thoughts become policies and policies become action.
36*	I act without consulting my colleagues.
37	Creating a common goals and vision feels like a rewarding work.
38*	Getting people to work together is not easy and unpleasant.
39	I seek harmony in teams and try to resolve conflicts.
40	People confide their personal matters and problems with me.
41	Whenever I share my thoughts I'm able to connect and stimulate wide range of audience.
42	I follow a strong set of principles in my profession.
43*	I say something and do something else.
44	I put my effort when I'm assigned with task.
45	I complete all my due assignments beforehand.
46	I work consistently to reduce the gap between high and low performance students.
47	I like to practice fairness and authenticity in my work.
48	I belief in the worth and ability of each individual.
49	I like to provide equal opportunity to each student for self-growth and development.
50*	Teaching ethical values and developing the character of pupil is not important.
51*	I encourage students to download or share pirated software.

Final
LEADERSHIP SKILLS SCALE
[Note **-*** indicates the negative statements]

S.No.	Items
	Risk-taking
1	I adopt new methodologies in my teaching.
2	I am able to take charge a group of people.
3	I can influence others very easily.
4	I'm confident in my abilities to improve student achievement and their personality development.
5	I enjoy accomplishing challenging targets in teaching learning process.
6	I motivate pupils in their learning process.
	Effectiveness
7	I see learning as an essential part of my professional life.
8*	I'm hesitant to attain formal training.
9	I like to take feedback from students to evaluate my teaching.
10*	I feel uneasy while handling technical equipments in the classrooms.
11*	I can't mingle easily with others in a variety of work situations.
12	I can read the hidden emotions of others.
13*	I find difficulty to understand from others perspective.
	Autonomy
14	I am able to plan my own curriculum and syllabus to complete on time.
15	I can give suggestions for school improvement.
16	I take decision to combine different teaching techniques to deliver my subject.
17	I always monitor student progress.
18*	I'm hesitant to reflect on my teaching for improvement.
	Collegiality
19	I enjoy collaborative works.
20*	I never discuss my teaching styles with my peer groups.
21*	I'm hesitant to share my learning materials with my group.
22*	I find difficulty to get people to work together.
23	I seek harmony in teams.
24	I am able to express my thoughts into words.

25*	I can't solve the problems/conflicts of others.
	Ethics
26	I follow a strong set of principles in my work.
27*	I say something but do something else.
28	I give my best when I'm assigned with task.
29	I like to practice fairness in my work.
30*	I violate ethics in my work.
31*	I find difficulty to treat all students in same manner.
	Vision
32	I am able to bring something new in any organisation.
33	I am able to present realities into future possibilities.
34	I am able to identify my strengths.
35*	I'm afraid to work with novel ideas.

Digital Literacy Questionnaire -Answer sheet

Item No.	Yes	No	Item No.	Yes	No
1.	( )	( )	**21.**	( )	( )
2.	( )	( )	**22.**	( )	( )
3.	( )	( )	**23.**	( )	( )
4.	( )	( )	**24.**	( )	( )
5.	( )	( )	**25.**	( )	( )
6.	( )	( )	**26.**	( )	( )
7.	( )	( )	**27.**	( )	( )
8.	( )	( )	**28.**	( )	( )
9.	( )	( )	**29.**	( )	( )
10.	( )	( )	**30.**	( )	( )
11.	( )	( )	**31.**	( )	( )
12.	( )	( )	**32.**	( )	( )
13.	( )	( )	**33.**	( )	( )
14.	( )	( )	**34.**	( )	( )
15.	( )	( )	**35.**	( )	( )
16.	( )	( )	**36.**	( )	( )
17.	( )	( )	**37.**	( )	( )
18.	( )	( )	**38.**	( )	( )
19.	( )	( )	**39.**	( )	( )
20.	( )	( )			

Teaching Competence Scale-Answer Sheet

Item No.	Most of the time	Often	Rarely	Sometimes	Not at all	Item No.	Most of the time	Often	Rarely	Sometimes	Not at all
1.	( )	( )	( )	( )	( )	**19.**	( )	( )	( )	( )	( )
2.	( )	( )	( )	( )	( )	**20.**	( )	( )	( )	( )	( )
3.	( )	( )	( )	( )	( )	**21.**	( )	( )	( )	( )	( )
4.	( )	( )	( )	( )	( )	**22.**	( )	( )	( )	( )	( )
5.	( )	( )	( )	( )	( )	**23.**	( )	( )	( )	( )	( )
6.	( )	( )	( )	( )	( )	**24.**	( )	( )	( )	( )	( )
7.	( )	( )	( )	( )	( )	**25.**	( )	( )	( )	( )	( )
8.	( )	( )	( )	( )	( )	**26.**	( )	( )	( )	( )	( )
9.	( )	( )	( )	( )	( )	**27.**	( )	( )	( )	( )	( )
10.	( )	( )	( )	( )	( )	**28.**	( )	( )	( )	( )	( )
11.	( )	( )	( )	( )	( )	**29.**	( )	( )	( )	( )	( )
12.	( )	( )	( )	( )	( )	**30.**	( )	( )	( )	( )	( )
13.	( )	( )	( )	( )	( )	**31.**	( )	( )	( )	( )	( )
14.	( )	( )	( )	( )	( )	**32.**	( )	( )	( )	( )	( )
15.	( )	( )	( )	( )	( )	**33.**	( )	( )	( )	( )	( )
16.	( )	( )	( )	( )	( )	**34.**	( )	( )	( )	( )	( )
17.	( )	( )	( )	( )	( )	**35.**	( )	( )	( )	( )	( )
18.	( )	( )	( )	( )	( )						

Leadership Skills Scale- Answer Sheet

Item No.	Always	Often	Sometimes	Rarely	Never	Item No.	Always	Often	Sometimes	Rarely	Never
1.	( )	( )	( )	( )	( )	**20.**	( )	( )	( )	( )	( )
2.	( )	( )	( )	( )	( )	**21.**	( )	( )	( )	( )	( )
3.	( )	( )	( )	( )	( )	**22.**	( )	( )	( )	( )	( )
4.	( )	( )	( )	( )	( )	**23.**	( )	( )	( )	( )	( )
5.	( )	( )	( )	( )	( )	**24.**	( )	( )	( )	( )	( )
6.	( )	( )	( )	( )	( )	**25.**	( )	( )	( )	( )	( )
7.	( )	( )	( )	( )	( )	**26.**	( )	( )	( )	( )	( )
8.	( )	( )	( )	( )	( )	**27.**	( )	( )	( )	( )	( )
9.	( )	( )	( )	( )	( )	**28.**	( )	( )	( )	( )	( )
10.	( )	( )	( )	( )	( )	**29.**	( )	( )	( )	( )	( )
11.	( )	( )	( )	( )	( )	**30.**	( )	( )	( )	( )	( )
12.	( )	( )	( )	( )	( )	**31.**	( )	( )	( )	( )	( )
13.	( )	( )	( )	( )	( )	**32.**	( )	( )	( )	( )	( )
14.	( )	( )	( )	( )	( )	**33.**	( )	( )	( )	( )	( )
15.	( )	( )	( )	( )	( )	**34.**	( )	( )	( )	( )	( )
16.	( )	( )	( )	( )	( )	**35.**	( )	( )	( )	( )	( )
17.	( )	( )	( )	( )	( )	**36.**	( )	( )	( )	( )	( )
18.	( )	( )	( )	( )	( )	**37.**	( )	( )	( )	( )	( )
19.	( )	( )	( )	( )	( )	**38.**	( )	( )	( )	( )	( )

RAW SCORE [Teaching Competence; Digital Literacy; Leadership Skills; Academic Achievement]

S.NO	A	B	C	D	T1	T2	T3	T4	T5	T6	T7	T8	TCT	D1	D2	D3	D4	D5	DL
1	1	3	4	1	20	38	12	8	24	10	27	24	163	9	6	3	4	1	23
2	1	2	3	2	20	34	12	7	25	10	18	17	143	11	10	5	7	5	38
3	1	1	3	1	17	30	12	7	18	8	19	17	128	9	8	1	6	4	28
4	1	3	4	2	18	36	12	9	23	8	25	20	151	10	8	2	6	2	28
5	1	1	2	2	19	36	12	8	21	9	24	24	153	11	11	5	7	5	39
6	1	2	1	2	14	24	6	6	16	4	23	14	107	9	8	4	6	3	30
7	1	3	2	1	19	33	13	8	23	8	22	17	143	9	5	3	4	4	25
8	1	3	4	1	20	39	12	9	25	10	29	23	167	10	7	4	7	4	32
9	1	2	1	2	14	30	8	8	20	8	22	14	124	11	11	3	7	5	37
10	1	2	4	1	19	36	14	8	23	8	23	16	147	11	11	5	7	5	39
11	1	3	3	1	13	28	10	6	20	9	17	20	123	10	7	4	7	3	31
12	1	2	3	1	20	35	13	8	23	9	26	20	154	10	11	5	7	5	38
13	2	3	4	1	14	30	10	4	18	6	20	17	119	7	4	3	3	2	19
14	2	1	4	1	13	23	7	6	14	7	23	17	110	7	4	4	7	1	23
15	2	2	1	1	20	38	13	8	24	8	29	24	164	11	9	4	7	5	36
16	2	2	2	2	17	34	13	8	21	9	24	22	148	11	3	0	4	2	20
17	2	2	3	1	17	39	10	8	23	10	28	23	158	11	11	5	7	4	38
18	2	1	3	1	15	29	8	6	18	8	20	17	121	8	3	5	7	5	28
19	2	2	4	2	17	38	14	6	22	9	30	21	157	6	5	0	3	4	18
20	2	2	1	1	17	33	9	9	23	10	23	24	148	10	8	3	7	5	33
21	2	2	3	2	20	36	14	9	23	9	26	21	158	10	11	5	7	4	37
22	2	1	4	1	19	37	10	9	23	9	28	18	153	8	6	4	7	4	29
23	2	1	4	1	13	35	10	4	16	10	26	20	134	8	9	2	7	4	30
24	2	1	2	1	16	37	13	9	22	8	27	23	155	7	7	4	7	3	28
25	2	2	4	1	17	33	12	7	22	9	24	22	146	10	10	1	5	1	27
26	2	3	4	1	13	28	10	6	20	9	21	22	129	10	7	4	7	3	31
27	2	2	1	1	19	37	9	7	23	9	29	20	153	8	9	3	5	4	29
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29	2	2	3	1	15	34	12	8	22	10	26	20	147	9	11	4	7	3	34

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31	2	1	2	1	16	36	10	5	16	10	26	20	139	8	9	2	7	4	30
32	2	3	4	1	17	40	9	9	25	9	27	22	158	11	10	4	7	4	36
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34	2	2	4	1	8	30	5	7	17	9	18	22	116	10	10	4	5	2	31
35	2	3	2	1	16	35	13	8	22	9	24	23	150	10	5	1	4	1	21
36	2	2	4	2	20	40	14	10	25	10	30	25	174	10	10	5	7	3	35
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38	2	2	4	1	12	31	6	6	22	8	24	22	131	8	10	4	6	2	30
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42	2	2	2	1	16	38	12	10	22	10	24	22	154	9	7	4	6	5	31
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44	1	2	3	1	16	28	12	8	19	8	21	20	132	11	11	5	7	5	39
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53	1	2	1	1	18	38	13	10	23	10	27	23	162	10	8	3	5	3	29
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57	1	2	4	1	15	32	11	9	22	9	23	20	141	8	11	5	7	5	36
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61	1	3	1	1	13	31	10	9	19	9	20	16	127	10	11	5	7	4	37
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63	1	2	4	2	15	29	8	7	16	7	23	18	123	10	10	3	5	4	32
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74	2	2	1	1	19	36	12	9	21	10	30	22	159	11	11	5	7	5	39
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76	2	2	1	1	20	40	14	10	23	10	30	25	172	11	11	4	7	5	38
77	2	3	4	1	20	40	13	10	25	10	27	25	170	10	11	5	7	4	37
78	2	1	4	1	16	33	11	8	23	8	23	21	143	7	4	3	5	5	24
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96	2	1	4	1	14	36	12	8	22	8	24	22	146	8	8	3	3	3	25
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99	2	2	1	1	13	21	11	9	18	5	22	17	116	9	8	0	4	3	24
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103	2	1	4	1	18	32	10	7	23	8	22	22	142	9	8	4	6	3	30
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116	2	3	3	1	15	38	12	10	21	9	29	23	157	11	8	2	5	3	29
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147	1	2	1	1	19	37	13	8	23	8	26	23	157	11	11	5	7	5	39
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153	2	2	1	1	11	24	7	8	18	7	23	18	116	7	6	2	3	3	21
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169	2	2	4	1	18	37	11	9	23	9	25	22	154	11	8	5	6	3	33
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171	2	2	4	1	10	17	5	4	10	8	11	12	77	5	8	0	4	4	21
172	2	2	4	1	14	35	14	10	23	8	24	22	150	10	10	5	6	5	36
173	2	2	4	1	20	32	12	6	20	8	25	18	141	10	9	5	7	5	36
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175	2	2	1	1	18	34	15	10	23	6	30	20	156	9	8	5	5	4	31
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177	2	2	4	1	16	34	15	9	19	8	28	19	148	11	11	5	7	5	39
178	2	2	3	1	13	30	12	8	22	7	21	19	132	10	6	1	6	3	26
179	2	1	4	1	17	36	11	9	22	10	26	22	153	10	8	5	7	5	35

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181	2	2	4	1	17	35	12	9	21	9	22	22	147	3	3	3	3	3	15
182	2	1	4	1	19	38	11	10	22	9	26	21	156	11	9	5	7	5	37
183	2	2	2	2	15	36	10	8	21	9	26	24	149	5	7	3	6	2	23
184	1	2	4	2	18	36	12	10	22	9	22	21	150	8	7	3	5	5	28
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384	2	2	3	1	20	37	13	9	24	9	30	21	163	11	8	3	6	5	33
385	2	3	4	1	13	30	12	8	22	9	21	23	138	6	6	2	5	1	20
386	2	2	4	1	15	36	12	8	19	9	22	23	144	7	9	3	7	4	30
387	2	2	4	1	16	38	9	8	21	9	28	25	154	7	6	4	7	5	29
388	2	2	1	1	20	35	14	9	24	8	26	21	157	7	4	4	5	5	25
389	2	2	4	1	20	38	15	10	25	10	28	22	168	6	7	2	5	5	25
390	2	3	1	1	13	27	12	6	20	8	16	19	121	6	4	1	6	2	19
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392	2	3	1	2	18	36	12	9	22	9	25	23	154	10	11	3	5	4	33
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396	2	2	1	1	18	31	13	6	19	8	21	22	138	11	6	5	7	4	33
397	2	3	3	1	17	35	8	7	21	10	21	19	138	4	4	0	1	1	10
398	2	2	4	1	17	34	9	8	21	8	23	21	141	10	8	5	7	5	35
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400	2	2	4	1	19	39	12	8	23	10	26	24	161	10	10	5	6	5	36
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405	2	1	1	1	9	25	10	10	11	4	13	11	93	6	4	1	4	1	16
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407	2	2	3	1	19	37	13	9	24	9	27	25	163	8	8	2	3	2	23
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409	2	1	2	1	20	40	15	10	25	10	28	21	169	10	11	5	7	3	36
410	2	2	4	2	18	34	11	9	22	9	21	19	143	7	2	0	4	0	13
411	2	2	1	1	20	36	10	10	24	9	23	24	156	11	11	5	6	4	37
412	2	2	4	1	18	37	10	9	25	10	22	20	151	10	8	3	5	3	29
413	2	1	4	1	16	31	14	9	23	8	21	24	146	9	10	5	7	5	36
414	2	1	1	1	20	40	13	9	24	9	29	23	167	10	6	4	7	5	32
415	2	1	1	1	20	39	13	10	24	10	26	25	167	10	10	5	7	2	34
416	2	2	2	1	20	38	13	9	24	10	27	25	166	11	11	5	7	5	39
417	2	1	4	1	20	38	15	10	25	10	24	22	164	11	9	5	6	4	35
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423	2	2	4	1	18	38	10	9	25	10	29	22	161	10	11	5	7	5	38
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425	2	2	1	1	16	36	13	9	20	9	24	18	145	8	6	2	7	4	27
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431	2	2	4	1	20	38	12	9	20	9	27	21	156	10	10	5	7	5	37
432	2	2	1	1	18	35	14	10	21	8	21	15	142	9	6	4	7	4	30
433	2	3	3	1	20	38	15	10	25	10	24	22	164	10	8	5	5	2	30

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436	2	2	4	1	17	39	13	9	24	10	24	16	152	10	8	5	5	4	32
437	2	3	1	1	13	28	9	6	12	8	16	19	111	8	9	2	7	5	31
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450	1	2	4	2	19	37	14	10	25	9	25	24	163	11	6	5	5	3	30
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452	1	1	3	1	19	33	9	6	19	8	21	21	136	11	11	5	7	4	38
453	2	2	2	1	19	36	12	10	24	8	29	24	162	11	10	5	7	5	38
454	2	2	4	1	18	37	11	10	25	9	29	24	163	10	6	5	7	4	32
455	2	2	1	1	17	35	12	9	20	8	26	21	148	10	8	3	4	3	28
456	2	1	4	1	13	31	9	6	21	6	25	18	129	8	5	0	3	3	19
457	2	2	2	1	18	38	12	9	24	10	29	25	165	11	11	5	6	5	38
458	2	2	2	1	16	34	8	8	21	7	25	17	136	11	11	4	7	5	38
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460	2	2	4	1	20	39	13	10	25	10	28	23	168	11	11	5	7	5	39
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462	2	1	4	1	20	40	13	10	25	10	30	25	173	9	9	4	7	5	34
463	2	1	1	1	15	34	13	7	21	8	26	21	145	8	8	3	7	4	30
464	2	2	3	1	14	16	10	4	12	4	12	10	82	6	5	0	0	0	11
465	2	2	4	1	17	40	15	10	19	7	24	22	154	11	11	5	7	5	39
466	2	1	1	1	15	34	13	9	22	10	22	20	145	8	8	5	7	5	33
467	2	2	1	1	14	20	8	4	12	6	12	15	91	8	6	5	7	5	31
468	2	2	3	1	20	36	14	9	22	10	26	22	159	7	6	1	2	3	19

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470	2	2	3	2	19	39	14	9	24	9	30	25	169	11	11	4	7	5	38
471	2	2	3	1	17	32	12	6	20	8	25	18	138	5	8	2	7	4	26
472	2	2	1	1	17	34	13	9	22	8	22	21	146	9	6	2	5	2	24
473	2	1	1	1	18	39	12	9	24	10	26	23	161	11	7	5	6	5	34
474	2	2	2	1	20	38	14	9	24	9	29	23	166	9	5	4	7	5	30
475	2	2	1	1	19	37	13	10	23	7	26	24	159	8	9	5	3	4	29
476	2	2	3	1	18	37	13	10	21	8	25	21	153	9	4	0	6	2	21
477	2	1	4	1	13	37	14	8	23	10	27	24	156	7	7	0	6	3	23
478	2	1	2	1	17	36	14	9	22	9	29	22	158	10	9	2	5	3	29
479	2	1	4	1	15	27	8	8	11	6	21	17	113	10	10	4	7	5	36
480	2	1	4	1	15	30	10	8	20	8	26	17	134	9	8	3	6	4	30
481	2	1	2	1	16	30	10	8	20	9	20	16	129	10	9	5	7	5	36
482	2	1	4	1	20	40	15	10	25	10	30	25	175	11	11	5	7	5	39
483	2	2	1	1	20	39	11	10	24	10	29	22	165	10	11	5	7	5	38
484	2	2	2	1	20	33	13	9	22	8	25	21	151	11	8	5	7	5	36
485	2	2	4	1	16	32	10	6	18	8	22	16	128	11	10	4	7	4	36
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487	1	1	4	1	17	31	9	8	16	9	18	25	133	11	8	5	6	2	32
488	1	1	3	1	17	30	8	10	21	8	22	22	138	11	11	5	7	5	39
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491	1	2	4	1	16	33	11	8	22	10	27	18	145	8	11	4	7	4	34
492	1	2	1	1	17	36	11	9	18	8	23	20	142	11	11	5	7	5	39
493	1	1	2	1	14	34	12	7	22	6	26	21	142	10	6	3	3	3	25
494	1	1	1	1	12	26	8	4	11	6	18	14	99	11	11	5	7	5	39
495	1	1	2	2	12	26	8	6	20	3	13	14	102	7	5	3	5	2	22
496	1	1	4	1	18	34	10	4	22	8	21	18	135	11	11	5	7	5	39
497	1	2	4	2	17	37	10	10	22	10	29	22	157	10	11	5	7	5	38
498	1	2	4	2	13	31	7	10	15	8	20	17	121	11	11	5	7	5	39
499	1	2	4	1	17	38	4	7	24	10	20	19	139	8	7	3	4	4	26
500	1	1	4	1	16	29	12	6	20	5	23	17	128	6	3	0	6	3	18

501	1	2	1	1	18	31	9	7	20	7	14	19	125	4	3	0	2	2	11
502	1	1	4	1	20	38	15	7	24	10	27	21	162	11	6	2	3	1	23
503	1	2	3	1	16	32	10	8	19	9	21	20	135	9	6	3	4	2	24
504	2	1	1	1	16	30	12	6	18	8	21	22	133	5	4	2	3	1	15
505	2	2	4	1	17	33	12	8	21	8	23	21	143	9	9	3	7	3	31
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507	2	2	4	1	16	37	12	8	24	10	28	22	157	5	4	0	2	0	11
508	2	1	4	1	18	31	12	9	21	9	28	22	150	6	2	0	4	1	13
509	2	1	1	1	18	36	12	6	22	10	25	17	146	9	6	1	4	1	21
510	2	2	1	2	18	36	13	8	22	9	26	17	149	7	2	1	5	3	18
511	2	1	4	1	15	31	7	7	21	8	17	20	126	4	5	1	4	5	19
512	2	2	1	1	15	25	9	6	17	4	17	13	106	3	7	1	2	3	16
513	2	3	4	1	17	35	9	4	21	9	20	19	134	6	5	3	6	1	21
514	2	2	4	1	18	38	12	9	23	9	23	22	154	8	7	5	6	5	31
515	2	1	4	1	20	29	13	10	21	10	24	20	147	7	8	4	7	5	31
516	2	2	4	1	16	22	12	4	15	6	16	19	110	5	6	2	5	4	22
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518	2	2	1	1	18	39	10	8	23	8	27	20	153	10	6	3	6	5	30
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520	2	1	4	1	19	24	9	7	14	9	21	17	120	7	2	2	2	2	15
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523	2	2	1	1	19	38	13	6	23	9	28	23	159	7	9	5	7	4	32
524	2	2	4	2	20	38	13	9	24	9	28	20	161	10	10	0	7	4	31
525	2	2	4	1	16	27	10	7	21	9	25	25	140	10	7	3	6	4	30

526	2	2	4	1	20	34	14	8	22	8	23	20	149	11	9	4	7	5	36
527	2	2	4	2	16	32	9	8	23	4	17	15	124	10	9	2	6	5	32
528	2	2	4	1	17	36	10	8	24	9	23	20	147	7	9	1	6	2	25
529	2	1	4	1	16	35	12	8	20	9	21	16	137	7	8	3	7	3	28
530	2	1	1	1	20	37	10	9	21	9	28	19	153	7	2	4	7	3	23
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533	2	2	4	1	19	38	13	9	23	8	27	22	159	5	4	3	4	3	19
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535	2	2	1	1	10	35	6	9	18	10	26	23	137	7	5	0	3	3	18
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537	2	2	2	1	16	31	12	8	19	9	23	19	137	6	5	0	5	3	19
538	2	1	4	1	20	37	14	10	23	10	28	25	167	4	3	0	0	1	8
539	2	1	2	1	16	34	13	6	24	8	23	20	144	6	4	0	6	2	18
540	2	2	1	1	19	36	13	8	25	10	18	15	144	8	5	5	5	3	26
541	2	2	1	1	20	38	13	8	23	8	24	20	154	10	7	4	6	3	30
542	2	1	1	1	18	39	12	9	23	9	25	22	157	10	9	5	6	4	34
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544	2	1	4	1	9	18	9	6	11	5	13	12	83	11	10	1	4	2	28
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546	2	2	1	1	16	33	9	10	23	7	21	22	141	11	11	5	7	5	39
547	2	1	2	1	19	37	13	8	23	9	23	23	155	9	9	2	6	4	30
548	2	2	2	1	18	37	9	6	19	9	22	19	139	6	9	2	5	2	24
549	2	2	1	1	18	40	10	10	22	10	27	18	155	11	11	5	7	5	39
550	2	2	4	1	19	33	10	8	17	10	22	21	140	9	6	0	3	3	21

551	2	2	1	2	20	23	13	7	17	3	13	10	106	4	4	4	4	2	18
552	2	2	4	1	15	19	12	6	14	4	18	16	104	5	4	3	6	1	19
553	2	1	4	1	15	29	10	8	12	6	16	15	111	7	8	3	4	3	25
554	2	2	1	2	16	26	12	6	15	8	20	14	117	7	4	3	4	2	20
555	2	1	1	1	19	29	11	8	19	6	23	18	133	7	3	2	3	3	18
556	2	1	3	1	20	36	10	6	20	6	21	21	140	4	5	0	3	1	13
557	2	1	1	1	18	37	13	8	25	10	22	19	152	7	7	2	4	3	23
558	2	1	4	1	13	34	6	4	18	7	16	15	113	8	7	3	6	2	26
559	2	1	4	1	20	27	9	7	21	5	18	14	121	7	3	2	5	2	19
560	2	2	1	1	16	34	13	6	24	8	23	20	144	6	6	0	6	2	20

S.NO	A	B	C	D	L1	L2	L3	L4	L5	L6	**Leadership Score**	**Academic Achievement Score**
1	1	3	4	1	23	28	23	28	27	15	**144**	**46**
2	1	2	3	2	26	28	19	25	25	14	**137**	**74**
3	1	1	3	1	21	29	17	27	22	14	**130**	**74**
4	1	3	4	2	22	24	19	31	22	16	**134**	**60**
5	1	1	2	2	22	28	23	29	28	16	**146**	**74**
6	1	2	1	2	17	28	16	24	20	12	**117**	**63**
7	1	3	2	1	22	25	19	27	23	15	**131**	**56**
8	1	3	4	1	25	29	23	30	26	13	**146**	**41**
9	1	2	1	2	21	26	19	28	25	15	**134**	**71**
10	1	2	4	1	20	22	18	18	20	13	**111**	**75**
11	1	3	3	1	21	29	21	28	25	13	**137**	**65**
12	1	2	3	1	23	30	21	29	28	14	**145**	**81**
13	2	3	4	1	17	22	15	21	23	12	**110**	**77**
14	2	1	4	1	17	27	18	25	22	12	**121**	**68**
15	2	2	1	1	23	29	22	31	26	15	**146**	**70**
16	2	2	2	2	25	25	19	27	28	13	**137**	**57**
17	2	2	3	1	22	27	19	29	29	14	**140**	**74**
18	2	1	3	1	18	26	22	25	28	13	**132**	**66**
19	2	2	4	2	21	25	19	25	23	11	**124**	**76**
20	2	2	1	1	24	31	20	30	29	12	**146**	**65**
21	2	2	3	2	24	27	21	28	27	15	**142**	**73**
22	2	1	4	1	20	24	20	29	26	16	**135**	**63**
23	2	1	4	1	19	23	23	23	24	13	**125**	**76**
24	2	1	2	1	15	26	16	27	25	14	**123**	**88**
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550	2	2	4	1	21	29	24	30	29	14	**147**	**54**
551	2	2	1	2	25	24	22	29	24	15	**139**	**55**

552	2	2	4	1	22	31	20	32	30	16	**151**	**56**
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554	2	2	1	2	22	25	15	26	24	14	**126**	**66**
555	2	1	1	1	22	29	24	30	28	14	**147**	**62**
556	2	1	3	1	21	28	23	29	28	17	**146**	**75**
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558	2	1	4	1	17	25	17	27	28	11	**125**	**62**
559	2	1	4	1	18	26	16	27	30	14	**131**	**42**
560	2	2	1	1	16	28	21	24	21	15	**125**	**65**

Note:
T1=Teaching Competence Dimension 1
T2=Teaching Competence Dimension 2
T3=Teaching Competence Dimension 3
T4= Teaching Competence Dimension 4
T5= Teaching Competence Dimension 5
T6= Teaching Competence Dimension 6
T7= Teaching Competence Dimension 7
T8= Teaching Competence Dimension 8
TCT= Teaching Competence Total
D1= Digital Literacy Dimension 1
D2= Digital Literacy Dimension 2
D3= Digital Literacy Dimension 3
D4= Digital Literacy Dimension 4
D5= Digital Literacy Dimension 5
DL= Digital Literacy Total
L1= Leadership Dimension 1
L2= Leadership Dimension 2
L3= Leadership Dimension 3
L4= Leadership Dimension 4
L5= Leadership Dimension 5
L6= Leadership Dimension 6
LS= Leadership Score
AAS=Academic Achievement Score

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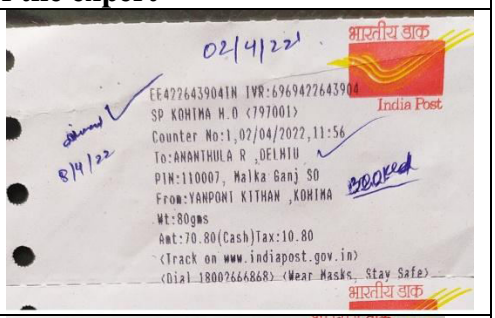
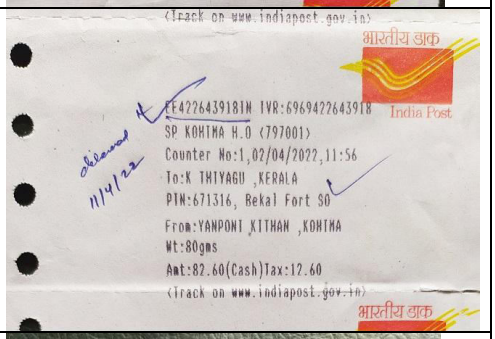
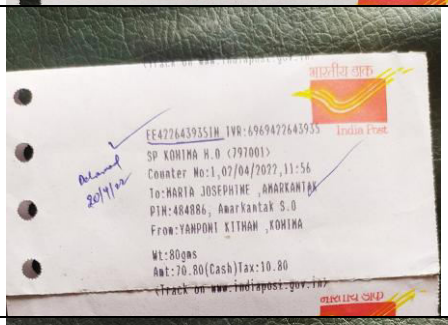
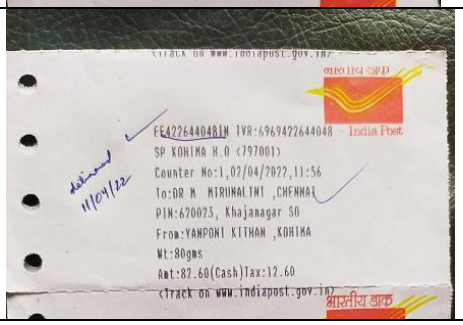
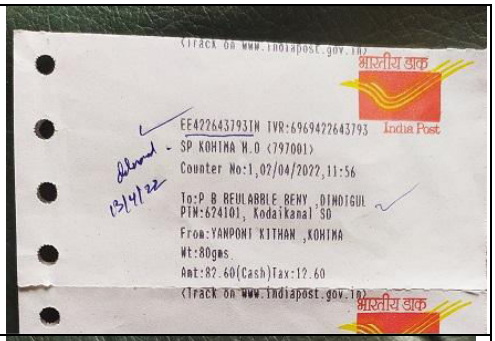
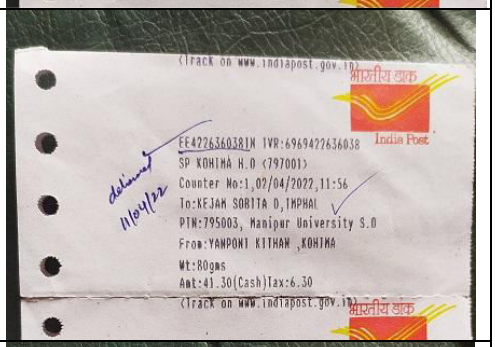
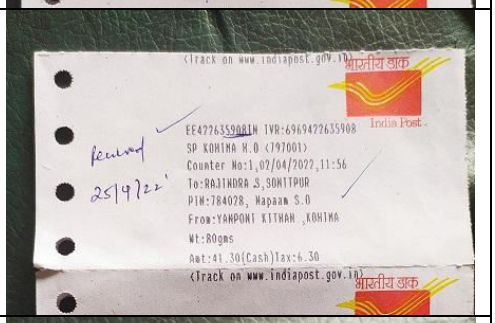
1	Dr.Ananthula Raghu, Assistant Professor, Dept. of Education (CIE), University of Delhi Delhi - 110007	
2	Dr.Ravi Vanguri, Assistant Professor, Department of Educational Studies, Central University of Jammu, Bagla(Raya-Suchani), Samba District, Jammu-181143	
3	Dr. K.Thiyagu, Assistant Professor, Department of Education, Room No: 217, Teaching Block II, Central University of Kerala, Tejaswini Hills, Periye, Kasaragod, Kerala - 671 316, India	
4	Dr.Maria Josephine Arokia Marie. S Assistant Professor, Department of Education, Indira Gandhi National Tribal University, Lal Pur, Amarkantak, Madhya Pradesh- 484 886	
5	Dr. M. Mirunalini, Assistant Professor Department of Educational Technology Bharathidasan University, Khajamalai Campus, Tiruchirappalli-620 023 Tamil Nadu,India.	

6	Dr P.B.BEULAHBEL BENCY, Assistant Professor, Dept of Education, Mother Teresa Women's University, Kodaikanal-624101	
7	Dr Koijam Sobita Devi, DEPT OF TEACHER EDUCATION, Manipur University Indo-Myanmar Road , Canchipur - 795003 Imphal, Manipur , India	
8	Dr. RAJINDER SINGH, Department of Education, School of Humanities & Social Sciences, Tezpur University, Napaam, Tezpur, Sonitpur, Assam (INDIA)- 784028	
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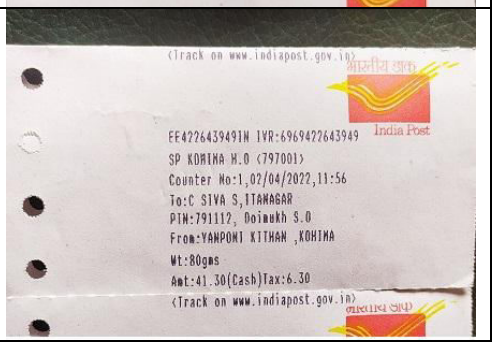
10	Dr. C. Siva Sankar Associate Professor Dept. of Education Rajiv Gandhi University Doimukh-791112,Arunachal Pradesh	

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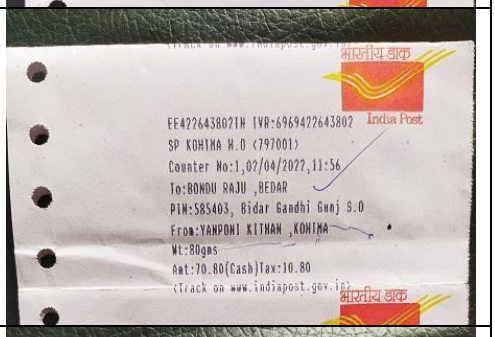
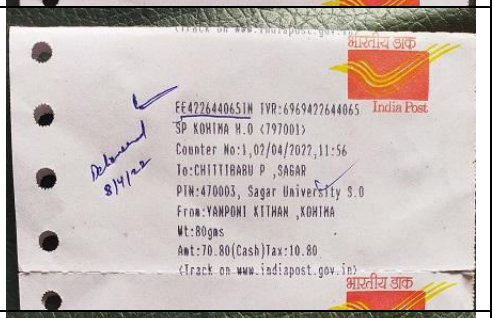
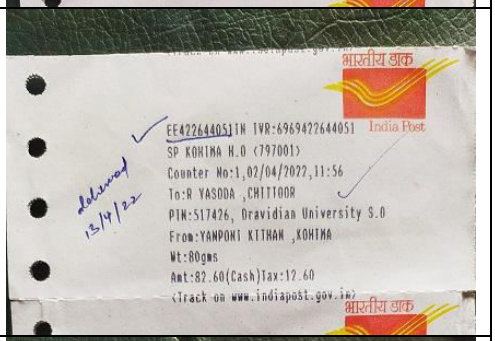
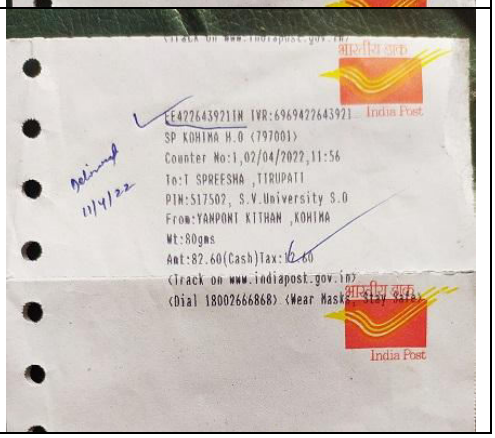
12	Dr. Bondu Raju , Assistant Professor, Maulana Azad National Urdu University, College of Teacher Education, Bidar, Karnataka-585403	
13	Dr Chittibabu Putcha Assistant Professor Department of Adult Education, Dr Harisingh Gour Vishwavidyalaya (A Central University) Sagar Madhya Pradesh -470003.	
14	Dr. R.Yasoda , Associate Professor, Dept. of Education,Dravidian University Srinivasa Vanam Kuppam-517426, Chittoor Dist. (A.P.)	
15	Dr.T.SIREESHA, Department of Education, SRI PADMAVATI MAHILA VISVAVIDYALAYAM,Padmavathi Nagar, Tirupati, Andhra Pradesh 517502	

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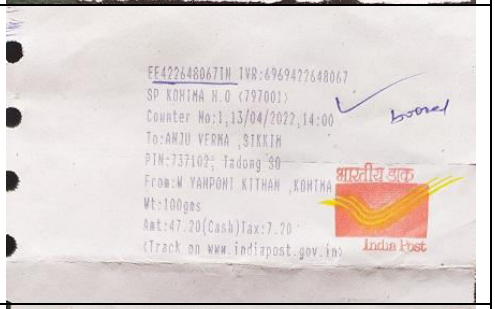
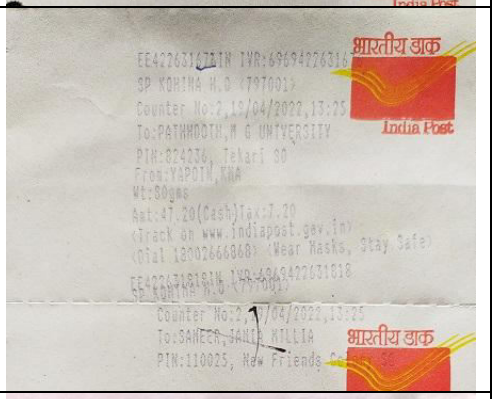
17	Dr.Shri. Puvvada Viswanadha Gupta, Assistant Professor, Department of Lifelong Learning and Extension, Savitribai Phule Pune University, Ganeshkhind, Pune-411007	
18	Dr. Anju Verma Designation: Assistant Professor, DEPARTMENT OF EDUCATION, Sikkim University 6th mile, Samdur, P. O. : Tadong-737102 Gangtok, Sikkim	
19	Dr.Hillol Mukherjee, Assistant Professor, Institute of Advanced Studies in Education.(IASE) P.O-Kunjaban Agartala Tripura (west) Pin : 799006	
20	Dr. Amar Upadhyaya, Assistant Professor Department of Education, Dibrugarh University, Dibrugarh – 786004, Assam, India.	

21	Dr Sandeep Kumar, Assistant Professor Department of Teacher Education School of Education Central University of South Bihar SH-7, Gaya Panchanpur Road, Village – Karhara, Post. Fatehpur, Gaya – 824236 (Bihar).	
22	Dr Pathloth Omkar , Assistant Professor, Department of Educational Studies, School of Education, Mahatma Gandhi Central University, Pt. Deen Dayal Upadhayaya Parisar,, Near Pt. Ugam Pandey College Baluatal, Motihari, District- East Champaran, Bihar- 848401 (INDIA).	
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25	Dr. Surendra Yadav, Assistant Professor Department of Teacher Education Nagaland University, Meriema	
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27	Dr. Dhrubajyoti Bordoloi Assistant Professor Department of Management School of Management Studies Nagaland University Kohima Campus	

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By W Yanponi Kithan Reg. No: Ph.D./TED/00399

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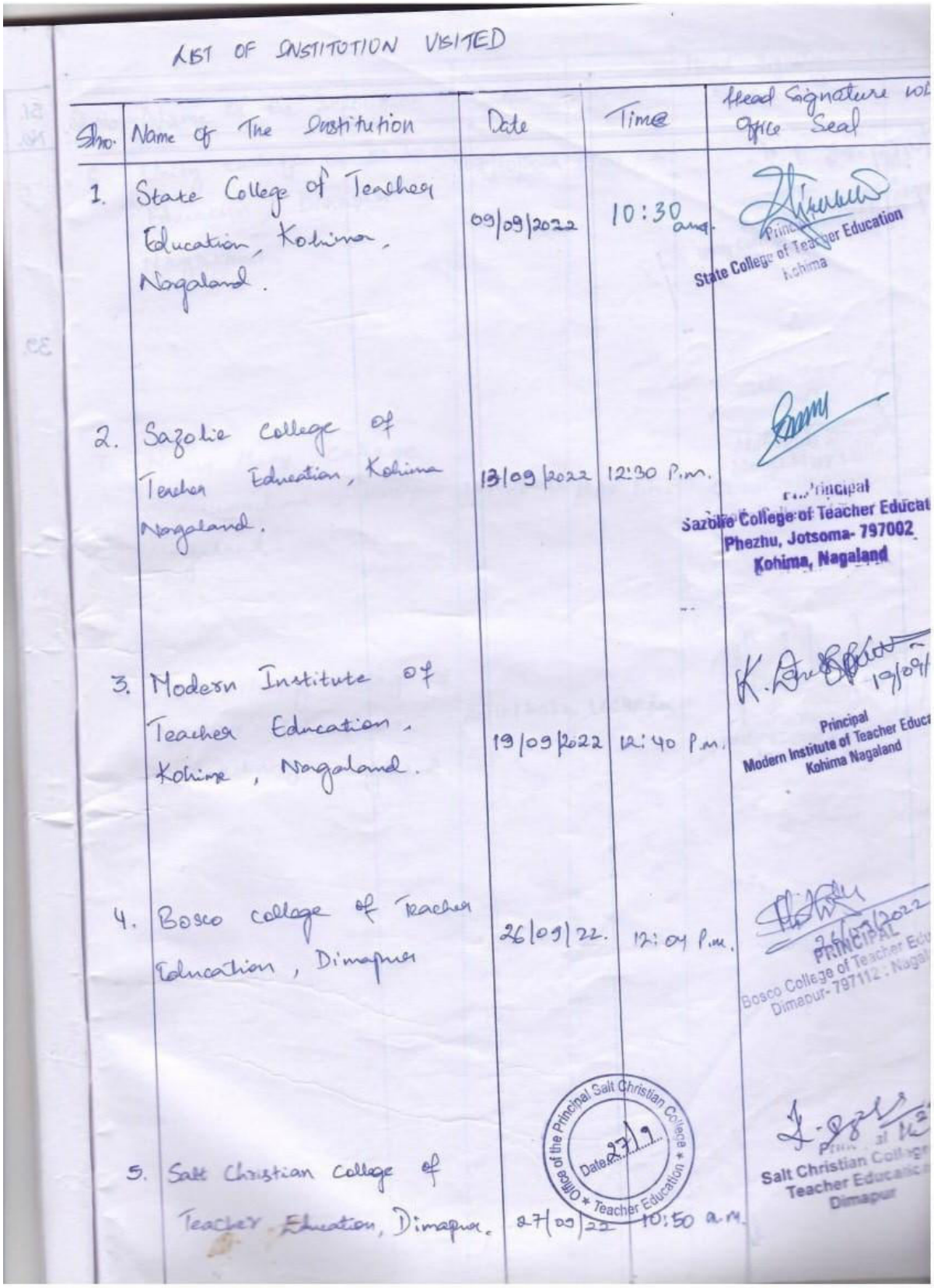
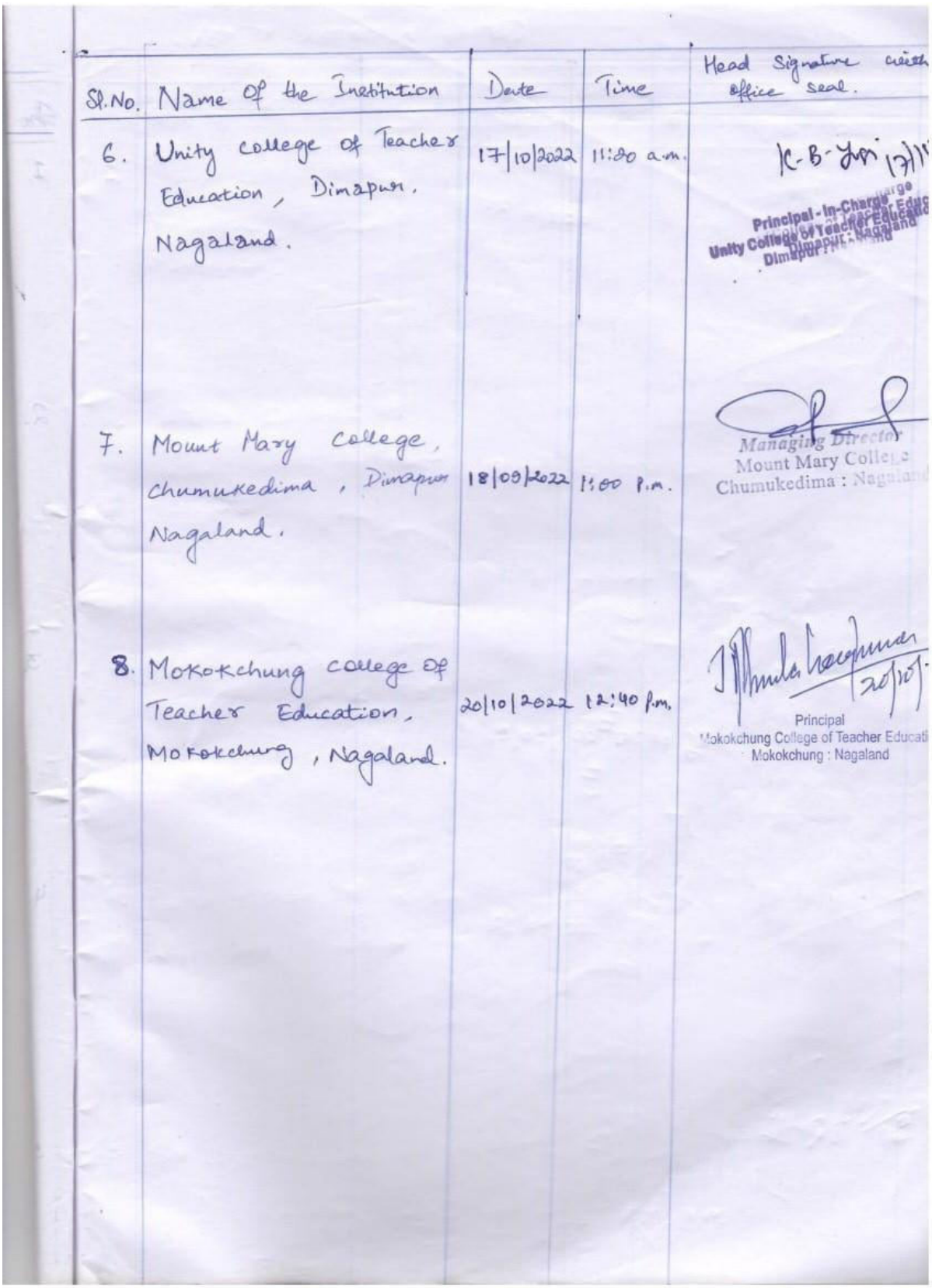


LIST OF INSTITUTION VISITED

Sl no.	Name of The Institution	Date	Time	Head Signature with Office Seal
1.	State College of Teacher Education, Kohima, Nagaland.	09/09/2022	10:30 am.	Principal State College of Teacher Education Kohima
2.	Sazolie College of Teacher Education, Kohima Nagaland.	13/09/2022	12:30 P.m.	Principal Sazolie College of Teacher Educat Phezhu, Jotsoma- 797002 Kohima, Nagaland
3.	Modern Institute of Teacher Education, Kohima, Nagaland.	19/09/2022	12:40 P.m.	19/09/ Principal Modern Institute of Teacher Educ Kohima Nagaland
4.	Bosco college of Teacher Education, Dimapur	26/09/22.	12:04 P.m.	26/09/2022 PRINCIPAL Bosco College of Teacher Edu Dimapur-797112 : Nagal
5.	Salt Christian College of Teacher Education, Dimapur.	27/09/22	10:50 a.m.	Office of the Principal, Salt Christian College Date 27/9 * Teacher Education * Principal Salt Christian College Teacher Educatio Dimapur



Sl.No.	Name of the Institution	Date	Time	Head Signature with office seal.
6.	Unity college of Teacher Education, Dimapur, Nagaland.	17/10/2022	11:20 a.m.	Principal-In-Charge Unity College of Teacher Education Dimapur : Nagaland
7.	Mount Mary college, Chumukedima, Dimapur Nagaland.	18/09/2022	1:00 p.m.	Managing Director Mount Mary College Chumukedima : Nagaland
8.	Mokokchung college of Teacher Education, Mokokchung, Nagaland.	20/10/2022	12:40 p.m.	Principal Mokokchung College of Teacher Education Mokokchung : Nagaland

Papers Presented in National / International Seminars funded by UGC/ ICSSR / Central Institutions and etc.

Sl. No.	Name of the Scholar	Title/Theme of the Seminar/Conference/ Symposia	Organised by	Dates	Level International/ National/Regional	Title of Paper Presented
1	W. Yanponi Kithan	International Conference on 'Language Teaching and Skills for Lifelong Learning'	Department of English, Nagaland University	19th to 21st February, 2024	International	Digital Literacy among Student Teachers in Nagaland: Demographic Analysis
2	W. Yanponi Kithan	National Seminar cum Annual Conference of North East India Education Society (NEIES) on 'Implementation of NEP 2020 with special reference to North-East India: Issues and The Way Forward'	Department of Education, NEHU, Shillong.	20th and 21st October, 2022	National	Effective Governance and Leadership in HEIs as per NEP 2020: Provisions and Implications
3	W. Yanponi Kithan	National level seminar on 'Issues and Challenges in Teacher Education'	Unity College of Teacher Education, Nagaland	23rd and 24th August, 2019	National	Learning Styles in relation to Academic Achievement of Class IX Students

Paper ID: 24LTSLL...23.....

Nagaland University

(A central university established by the Act of Parliament, 35/1989)
Kohima Campus, Meriema, Kohima - 797004, Nagaland.

Department of English

Certificate

This is to certify that Mr./Ms./Dr./Prof. W. Yanponi Kithan

presented a paper titled Digital Literacy Among Student Teachers in Nagaland : Demographic Analysis

in the first International Conference on "Language Teaching and Skills for Lifelong Learning" held from February 19 to 21, 2024.

Head
Department of English

Dean
Humanities and Education

International Expert

Two Day National Seminar cum Annual Conference
of North East India Education Society (NEIES)
on
"Implementation of NEP 2020 with special reference to North – East India: Issues and The Way Forward"
20th and 21st October , 2022

आज़ादी का अमृत महोत्सव

THIS IS TO CERTIFY THAT

W Yanponi Kithan, Research Scholar, Department of Teacher education, Nagaland University, Kohima Campus, Meriema, Nagaland

was a Resource Person / Chairperson / Participated / Presented a paper entitled / on

Effective Governance and Leadership in HEIs as per NEP 2020: Provisions and Implications

in the National Seminar cum Annual Conference of North East India Education Society (NEIES) held on 20th and 21st October ,2022 organised by Department of Education, North-Eastern Hill University , Shillong in collaboration with North East India Education Society (NEIES).

Prof S. M. Sungoh
PRESIDENT NEIES

Prof C. Nongbri
GEN SECRETARY NEIES

Prof B. B Kharbirymbai
HOD & JOINT SECRETARY NEIES

Prof I. Syiem
ORGANISING SECRETARY

UNITY COLLEGE OF TEACHER EDUCATION

Near Nagaland University Residential Campus, Residency Colony
Dimapur – 797112, Nagaland

TWO-DAY NATIONAL LEVEL SEMINAR

Certificate

This is to certify that

Prof/Dr/Mr/Ms W. Vanponi Kitran has

participated/presented a paper entitled

Learning styles in relation to academic achievement of class IX students

in the National Level Seminar on "Issues and Challenges in Teacher Education"

organized by Unity College of Teacher Education

on 23rd & 24th August 2019.

Shri N. M. OKUNG
Chairman
Unity College of Teacher Education

Dr. T. YOLILA SANGTAM
Principal
Unity College of Teacher Education

Journals/Articles published in UGC-CARE listed/ Web of Sciences of Journals

Sl. No.	Name of the Author(s)	Title of the paper	Name of the Journal	ISSN No.	Issue, Page No. Volume No., Date & Year	UGC-CARE listed / Web of Sciences Journal
1	W. YanponiKithan, Surendra Yadav, & M. Rajendra Nath Babu	Learning Styles in relation to Academic Achievement of Class IX students.	Arhu Kuruhu, Bilingual Journal	2347-5048	13(50), 467 – 475 & October- December 2022	UGC-CARE listed
2	M. Rajendra Nath Babu & W. Yanponi Kithan	Digital Literacy among Student Teachers in Nagaland, India: A Demographic Analysis.	International Journal of Educational Sciences	0975-1122	2024	Web of Science Journal