DIGITAL INTELLIGENCE OF SECONDARY SCHOOL TEACHERS IN THE MODERN ERA

SIVARAHINI G

Reg.no 20PED004

A THESIS SUBMITTED TO

AVINASHILINGAM INSTITUTE FOR HOME SCIENCE AND HIGHER EDUCATION FOR WOMEN,

COIMBATORE- 641043.

In Partial Fulfillment of the Requirements for the Degree of

MASTER OF EDUCATION

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CERTIFIED AS BONAFIDE RESEARCH WORK

S.S.M 31/5/22

Signature of the Head of the Department

S.Vidhya 31/5/22

Signature of Guide

CERTIFICATE

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INTRODUCTION

CHAPTER-1

1.1 Introduction

Education plays a vital role in shaping successful people. It gives us the opportunity to become a productive member of a civilized society by acquiring all the necessary skills. We learn how to meet challenges and overcome obstacles. We learn how to become an integrated personality and maintain the perpetuation of our culture. People learn basic norms, rules, regulations, and values of society through education. Moreover, high quality education enables us to lead a successful life, enhances our intelligence, skills, knowledge, and brings positive changes in our life.

Education is one of the fields where digitalization has had the greatest impact. The essential thing is to equip people with the necessary skills to cope with digital life. Digital intelligence will become vital for developing the digital skills and digital profile that the century demands. The goal of the educators therefore is to excel in a world where digital media are ever present. The content of education keeps pace with the needs of modern society and is a mirror of its goals, values, and priorities.

Our former president, Dr. A.P.J. Abdul Kalam and Rajan (1998), in their book : "India 2020: A Vision for the New Millennium" stated that "If you are a teacher in whatever capacity you have a very special role to play because more than anybody else you are shaping generations". This statement is quite true for our education system. The progress of any country is dependent on its educational system and the education system will be able to discharge its set functions only when accomplished by right kind of teaching staff. It is the teachers that translate all educational theories into practice making the students learn. The teachers therefore have the most powerful influence in any system of education. Teaching is

the only field where students are being molded to become better citizens of next generation. Teachers are responsible to provide needed skills and positive attitude for the future citizens for which they are called as the nation builders. Education institutions see the rapid rise in enrollments. Students view this as a flexible option allowing them to study as per their time pace. Teachers too find it convenient to prepare their learning plans well aided by technology. Digital education is fun learning for all cadres and particularly effective for child learning as the innovative audio-video feature boosts the cognitive elements in a child's brain.

1.2 Conceptual Framework of the study

A nation depends on the activities of the teachers. Identically, they are working to grow the basement of the students. Digital learning establishes a mindset that allows us to continue adapting to new technologies well into the future. Skills in using digital devices are necessary for humans, nevertheless, they are not enough and do not meet our needs. These usually exist outside the realm of digital technologies, which then become the means of intermediating. It is essential to develop digital intelligence from early childhood education. The most important aspect can be considered to be the development of digital intelligence at the primary and secondary stage of basic school which must further continue at secondary schools. The digital world is becoming ever more intertwined with the world of the classroom. As tech continues to present new opportunities for learning, it is crucial for educators to adapt to our new knowledge landscape with approaches that benefit both them and their students. The Coalition for Digital Intelligence will coordinate the implementation of the Digital Intelligence framework across both the technology and education sectors, making sure that both work together and the world moves collectively faster towards universal Digital Intelligence. Digital learning increases access to education and knowledge while empowering students with a mindset and capabilities that sets them up for success in

their present and future. Teachers can better personalize learning to the needs of individual students. Effective learning can take place even when working remotely.

Effective teachers who are the builders of a nation are the lifetime learner. To point out, they keep knowledge of the latest changes in their subject. In addition, they learn the newest technology to help the students. For changing the globalizing world, the role of the teachers is essential to improve the sustainable education. At the same time, inspiring and guiding the students in increasing employability skills with the digital tools is the prerequisite for a teacher. Thus a teacher in the twenty-first century will be a digital teacher. Teachers are not the facilitator for learning of the students only, and now they are responsible for training the students for increasing employability skills, expanding the mind, growing digital citizenships, critical thinking, and creativity as well as sustainable learning. Thus, the winning of the students is the win of the teachers.

1.3 Digital Intelligence

Digital technologies are changing the world. We are influenced by them, whether we like it or not. They are simply everywhere, accompanying us wherever we go. New demands are placed on humans. People are facing new challenges as well as new threats. The present day places challenges before man that require new competences, skills, and attitudes. We can say that people's minds have gradually changed depending on a number of new impulses coming from the digital world. Naturally, education must also respond to these facts, which is nothing new. Current education really responds to these impulses. In many respects, it is influenced by people's desire, which is a key economic motivation. Similarly, the internet content is not managed either.The education system has been reflecting this idea in bringing up children from a very young age for centuries.

1.4 Digitization of Education

Education is one of the fields where digitalization has had the greatest impact. Developing digital intelligence goes far beyond operating a mobile device: the essential thing is to equip people with the necessary skills to cope with digital life. The Internet has made access to education universal but it is not equal everywhere because of the digital divide.

Digital Intelligence is "the sum of the social, emotional and cognitive skills that enable people to meet the challenges and demands of digital life". It also points out that these challenges do not increase because of the devices we use but rather because of the experiences to which they give us access. Digital Intelligence will become vital for developing the digital skills and digital profiles that this century demands.

1.5 The keys to Digital Intelligence

Digital intelligence is divided into three levels:

- **Digital Citizenship:** Use technology and digital media safely, responsibly and effectively.
- **Digital Creativity:** Create new content and turn ideas into reality through the use of digital tools.
- **Digital Entrepreneurship:** Use digital media and technologies to solve global challenges or create new opportunities.

1.6Dimensions of Digital Intelligence

Figure 1

In turn, Digital Intelligence must develop a number of capabilities: It has five dimensions.

Digital Identity

The ability to Create and manage one's own online identity and reputation. This includes understanding one's online personality and managing the short and long term impact of your online presence.

Digital Rights

The ability to understand and defend digital rights (to privacy, intellectual property, freedom of expression and protection against hate speech, among others).

Digital Use

The ability to Use digital devices and media with ease, including self-monitoring to achieve a healthy balance between one's online and offline life.

Digital Communication

The ability to communicate and collaborate with other people using digital technologies and media.

Digital Literacy

The ability to find, evaluate, use, share and create content, and develop computational thinking.

1.7 Promoting Digital Intelligence

As the Fourth Industrial Revolution advances and our lives become increasingly connected, the health and prosperity of societies around the world will depend on Digital Intelligence. Children are already immersed in the digital world they literally have it at their fingertips and they will define the world of tomorrow, but to do so they need to be equipped with the necessary skills. To achieve this, the whole of society must be involved, both the public and private spheres.

The digital world offers numerous opportunities, but it is also a source of concern for parents and educators**.** Education, therefore, must begin within the children's sphere of influence: their parents at home and teachers at school. Opportunities for assessment, which allow children to better understand their own strengths and weaknesses, are essential in order to guide them towards success.

1.8A Secondary School Teacher

The word ‘teach’ is derived from the Anglo Saxon word ‘teacon’ which means “to impart”, “to instruct”, “to make aware of” and “to train”. A teacher can be defined as a person who has enough knowledge in any field and conveys this knowledge to the ignorant one.

In the narrow vision teacher is an inevitable part of the social system, called school, who deliver lecture to students. In the wide sense, a teacher can be defined as anything or anybody which influences another and make a change in his intellectual, moral or physical level. The personality, character, and attitudes of a good teacher can influence and inspire the young people. In moulding the future of a child, the teacher has remarkable role.

1.9Role of Secondary School Teacher in Modern Era.

Students may be the focus of education and schools may be the providers of education, but teachers are the ones that make everything possible. Without teachers schools could not provide education, while students could not get the education they need. In the digital age, teachers need to be flexible and adaptable to whatever gets tossed their way. New technologies are being developed every day that change not only how students learn, but how teachers teach.

As a teacher, one may have been instructed by an administrator in the past to use a tech tool or app. A digitally literate teacher knows how their students engage and learn and can advocate for the right digital tools and technologies in their classroom. Our students aren’t born with digital literacy skills. While they may be comfortable using digital tools, their understanding of what these tools for can do for education purposes is often limited. As teachers today, we need to be aware of which digital technologies and tools to use in the classroom as well as how and when in interesting and creative ways to expand student learning. To unlock one’s full teaching potential, however, one need to have the digital knowledge, skills and confidence to rise to the occasion. As an educator, it’s up to a teacher to be at the forefront of

teaching with digital technologies, supporting digital literacy in his classroom so that the students have no ceiling in a rapidly expanding and changing education landscape.

The modern teacher thinks differently. In the modern world of today, teachers must not be limited by traditional, industrial-based mindsets. A successful teacher today needs to be on the lookout for all technological advances and especially those that have educational potential.

A great teacher promotes innovation. Innovation comes in all shapes and sizes, but a great teacher today needs to embrace the new and promote innovative leadership and pedagogy across all layers and roles of the learning community: school management, all faculty, students, and parents, even citizens of their school's neighborhood, city or state. The modern teacher needs to be on top of the system

In this modern era teaching is a complex process and the role of teacher is also complex, multidimensional and challenging. They have to play roles ranging from simple classroom teachers to role model. It is not a simple task; but a time consuming process and need constant concentration of mind. To play these roles effectively teacher has to face great challenges and needed to use technological applications, improved ways of teaching and more than that, he or she should be a continuous learner. They should have good mind and attention to gain all the qualities needed for an efficient teacher. In the age of knowledge explosion also teacher is a must for student's wellbeing. Thus the role of teacher in education is everlasting and evergreen.

1.9 Theoretical background of the study

Smart technologies are rapidly changing the overall educational framework in the country. Robert gardener's theory is applied .The penetration of digital education into the rural market is evolving fast. The situation in rural areas is troubling outdated teaching methods, shortage of teachers, inadequate student-teacher ratio, and insufficient teaching

resources, are some of the issues they are still struggling with. But thanks to affordable high-speed internet and direct-to-device technologies, these are empowering rural students to study courses online and improve their skills and knowledge. Technology has also helped teachers connect with students remotely spread across wide geographical locations. Interactive digital media will certainly help in addressing the shortage of teachers in the country in the near future.

Education at its heart is about human connections and relationships. While we can never replace the magic that happens between great teachers and students in an in-person environment, we should focus on the social aspects of technology to enhance connections from a distance. Much more attention must be directed on how technology will enhance Digital Intelligence in teaching and learning of a modern environment reaching students and teachers both in school and at home.

1.10Statement of the problem

The topic of the present study is, “Digital Intelligence of Secondary School Teachers in the Modern Era”.

1.11 Operational definitions of the key terms

Digital Intelligence is the sum of social, emotional, and cognitive abilities that enable individuals to face the challenges and adapt to the demands of life in the digital world.

A Secondary School Teacher is also known as a high school teacher who examines the knowledge of students to whom they are teaching

Modern Era is the present or resent times. A period beginning in the last quarter of the 20th century when information became easily accessible through publications and through the manipulation of information by computers and computer networks.

1.12 Selected Personal Variables of the Study

Gender: It is a key parameter of recognition in all cultures. In the present study gender refers to the male and female status of the secondary school teachers.

Academic Qualification: On the basis of Academic qualification the teachers were divided into two categories namely, Under Graduate and Post Graduate.

Academic Stream: It refers to the stream of study of the secondary schoolteachers which includes Arts and Science.

Medium of Instruction: It is the language that is being used in teaching. In the present study it refers to the medium that is being followed by the secondary school teachers. English and Tamil medium.

Type of Management: It refers to the type of management that teacher is teaching. In the present study it refers to the Government colleges and private colleges.

Experience: The teaching experience is taken as below five years and above five years.

Computer literacy: It refers to the literacy skills on computer and it is taken in to level as primary and secondary level.

Pedagogy used in teaching: It refers to the pedagogy used by the teacher in modern era. In the present study, it refers to the online mode and offline mode of teaching.

1.13 Need and significance of the study

- To build the level of Digital Intelligence among the Secondary School Teachers.
- To make the students prepare not only for future skills they will need, but for healthy, active life in a digitized and hyper connected world.
- To improve one' ability on teaching learning of new digital setting.
- To help prepare for this changing reality, making teachers of all levels to embrace Digital Intelligence.
- To pour innovation into teaching and learning to make digital education more interactive and robust.

1.14 Objectives of the study

- To measure the level of Digital Intelligence on Secondary School Teachers.
- To design and validate the scale on Digital Intelligence.
- To examine the difference in Secondary School Teacher's Digital Intelligence along with its various dimensions with respect to the sub groups of the sample such as Gender, Academic Qualification, Academic Stream, Medium of Instruction , Type of Management, Teaching Experience, Computer Literacy and Pedagogy used in Teaching.

1.15 Delimitations of the Study

The present study has many limitations; some of them are discussed here.

a. The study was limited to 150teachers of secondary school.

b. The study focuses only secondary school teachers.

c. The study was confined to limited geographical area only.

d. The study can be done with more dimensions on Digital Intelligence.

1.16 Chapter Organization

The study has been reported in five chapters.

Chapter I deals with the introduction, statement of the problem, definition of key terms, need and significance of the study, objective of the study, hypotheses of the study and limitation of the study.

Chapter II deals with Review of Literature in the area of the present study. It deals with relevant literature from India and abroad which give an idea regarding the research methods and its implications.

Chapter III deals with the Research Design, Methods and Procedures adopted by the Investigator, Population and sample of the study, Tool Construction and Development, Pilot study, Item analysis, Establishment of Reliability and Validity, Collection of data, Administration of the tests and Statistical techniques used in this study.

Chapter IV deals with the Analysis and Interpretation of data. It gives the results of various statistical methods used in the study such as Mean, Standard Deviation and t-test. The data related to Distribution of sample.

Chapter V deals with Summary and conclusion of the research with major findings of the study, Discussion of the results, Educational implications of the study, Suggestions for further research followed by References and Appendices.

REVIEW OF LITERATURE

CHAPTER II

REVIEW OF LITERATURE

2.1 Introduction

A Literature Review is "a systematic, explicit, and reproducible method for identifying, evaluating, and synthesizing the existing body of completed and recorded work produced by researchers, scholars, and practitioners."

- Arlene Fink, (2015)

A literature review is both a summary and explanation of the complete and current state of knowledge on a limited topic as found in academic books and journal articles. The review of literature is a task which continues throughout the duration of the thesis. It begins with a search of suitable topic, since a thesis aims to be a contribution to knowledge, a careful check should be made that the proposed study has not previously been carried out. Although completely new and original problems are rare, a previous study should not be exactly replicated unless the techniques used had been faulty or the findings and conclusions doubtful or unless some new sources of information had been discovered to shed new light of the problem. A good test is one where the problem still requires solution.

2.2 Purpose of literature review

Literature review is an integral part of entire research process and makes valuable contribution to every operational step. Its functions are:

a) **Bring clarity and focus to the research problem.**

b) **Improve methodology**

c) **Broaden knowledge**

d) **Contextualize the findings**

a) Bring clarity and focus to the research problem

Reviewing the literature helps the researcher in understanding the subject better and conceptualizing the research problem precisely and clearly. It helps the researcher in finding the relationship between his research problem and the amount of knowledge existing in the area.

b) Improve Methodology

By reviewing the literature, a researcher is able to find out whether others have used same procedures and methods like the one which she is proposing and whether the procedure worked well for her or she had to face any problem. In this way the researcher will be able to select a proper methodology which is capable of answering all her research questions**.**

c)Broadens knowledge base in the research area

It encourages the researcher to read thoroughly the area in which he decides to conduct the study. It also helps him to understand whether the finding of his study matches with the existing body of knowledge.

d)**Contextualize the findings**

It is important to place the research findings in the context of what is already known in the field of enquiry. For this researcher has to always go back to the review of literature**.** The researcher has grouped the studies under the heads of studies conducted in India and studies conducted abroad.

2.3 Sources of the Review

The sources of reference used in this study have included the social citation index, dissertation abstracts, and a computer search of the Educational Resources Information Center (hereafter called ERIC) data. The ERIC search utilized cross referencing of the descriptors audio-tutorial, lecture teaching methods, and recreation. The review of the literature examines some of the methods and theories currently being used in teaching as well

as a brief review of individualized instruction and more specifically the audio-tutorial method. Learning styles refer to one's preferences in processing external information or internal knowledge and experience.

2.4 Reviews of literature

Teachers' Digital Competencies in Higher Education: A Systematic Literature Review

Basilotta-Gómez-Pablos, Verónica; Matarranz, María; Casado-Aranda, Luis-Alberto; Otto, Ana (2022),International Journal of Educational Technology in Higher Education, have conducted a study on teachers' digital competencies in higher education: a systematic literature review. In this study, digital competence has gained a strong prominence in the educational context, being one of the key competencies that teachers must master in today's society. Although most models and frameworks focus on the pre-university level, there is a growing interest in knowing the state of digital competencies of university teachers, that is, the set of knowledge, skills and attitudes necessary for a teacher to make effective use of technologies. The aim of this research is to present a systematic review of the literature in the Web of Science and Scopus, to identify, analyze and classify the published articles between 2000 and 2021 on digital competences, and thus find and improve the research being done on digital skills and future avenues of teachers in the university context. The SciMAT software is used in the analysis. The initial search reveals more than 343 articles in English, of which 152 are duplicates and 135 are not related to the topic of study. After this filtering, 56 articles are obtained and analyzed in Despite the multiple studies that address this issue, it is necessary to continue improving research in this area, deepening the assessment of teachers' digital competencies and design, on this basis, more practical and personalized training programs that respond to the needs of teachers in the digital era.

The Impact of Digital Pedagogy Training on In-Service Teachers' Attitudes towards Digital Technologies

Pongsakdi, Nonmanut; Kortelainen, Arto; Veermans, Marjaana. Sep (2021) investigated the impact of digital pedagogy training on in-service teachers' attitudes towards digital technologies. This study aims to prepare schools for the demands of the twenty-first century, teachers have been challenged to expand their use of digital technologies in their teaching. This study is a part of OpenDigi, which aimed to create teachers' communities for enhancing digital pedagogy skills and the use of digital assessment tools. The aim of this study is to investigate the impact of digital pedagogy training on in-service teachers' attitudes towards digital technologies. The results showed that the impact of the digital pedagogy training depended on teachers' ICT confidence level. The challenges teachers face in expanding the use of digital technologies in practice and their commitment to the digital culture are discussed.

Investigating Teachers' Attitude toward Digital Literacy in EFL Classroom

Pratolo, Bambang Widi; Solikhati, Hana Amri. Feb (2021). In study of investigating teachers' attitude toward digital literacy in EFL classroom discussed that digital literacy has been a major concern for people involved in education sectors including students, teachers and policy makers. The objectives of the study is to make the education in this era more effective to help reach the goals, English teachers should be digitally more literate. The aims of this study are; 1) to find out how the digital literacy was implemented; 2) to determine teachers' attitude in implementing the digital literacy; 3) to scrutinize the challenges; and 4) the actions they took to cope with them. The teachers exhibited positive attitudes in the use of digital literacy for EFL teaching. Finally, this study suggests the need to develop teachers'

technical facilities, technological pedagogy, and policy makers to give digital literacy more attention.

The Effects of Principals' Digital Leadership on Teachers' Digital Teaching during the COVID-19 Pandemic in Malaysia

Hamzah, N. Hafiza; Nasir, M. Khalid M.; Wahab, Jamalullail Abdul . (2021). InJournal of Education and e-Learning Research Education involving digital technology is the latest transformation of the education system, especially during the occurrence of the COVID-19 pandemic. The main purpose of this study was to identify the level of digital leadership displayed by principals, the level of teachers' digital teaching practices and the elements of principals' digital leadership that predict the level of teachers' digital teaching. About 400 secondary school teachers in Hulu Langat District, Selangor were involved in this study. The findings of this study show that the level of digital leadership displayed by principals and teachers' digital teaching practice are both at a high level. However, the positive correlation between the two is moderate. Multiple regression found that only digital citizenship is a strong predictor of teachers' digital teaching. The findings show that the ability to plan and organize digital leadership programs is important and can help improve students' academic performance, despite the COVID-19 pandemic crisis.

Teachers' Perspectives on Digitalized Education and Deterrents to the Use of Digital Products in Educational Processes

Puchkova, Elena B.; Sorokoumova, Elena A.; Cherdymova, Elena I.; Temnova, Larisa V.(2021) investigated on Teachers' Perspectives on Digitalized Education and Deterrents to the Use of Digital Products in Educational Processes. This article aimed to research the educators' views on the use of digital technology and products in their

educational process. Questionnaire was used as a research technique, with 147 participant teachers at general secondary schools in Russia. The analysis of the data was through coding. The true nature of the ecosystem of digitalized education was fully covered by the authors in this study. According to educators, the main advantages of digital technology and digital technology products for the educational field are education continuity, accessibility, individualization, freedom of choice, social equality for students and quality of education. Authors of this article revealed that deterrents against using digital products and digital technology in education processes in teachers' opinion are lack of motivation, funds, knowledge and methodology.

'It Is No Longer Scary': Digital Learning before and during the Covid-19 Pandemic in Irish Secondary Schools

Scully, Darina; Lehane, Paula; Scully, Conor (2021) conducted a study on 'It Is No Longer Scary': Digital Learning before and during the Covid-19 Pandemic in Irish Secondary Schools. The use of digital technology to support teaching and learning in schools has been rising for years, but in March 2020, it became the only option when the COVID-19 pandemic resulted in the closure of almost all educational institutions worldwide. This article reports on a survey of secondary school leaders in Ireland, conducted three months after the closures.. The findings suggest that leaders are positively disposed towards technology, and that, prior to the crisis, approaches to digital learning were aligned with some best practice recommendations. Leaders perceived teachers' 'digital competence' as an area in need of development, and noted that the pandemic may have provided an impetus for this.

The Unique Effects of COVID-19 -- A Qualitative Study of the Factors That Influence Teachers' Acceptance and Usage of Digital Tools

Wohlfart, Olivia; Trumler, Tim; Wagner, Ingo. (2021) investigated a study on the unique effects of covid-19 -- a qualitative study of the factors that influence teachers' acceptance and usage of digital tools. The objective of this study is to examine the factors that influence teachers' acceptance of digital tools for undertaking distance teaching during the COVID-19 pandemic. Based on the variables of the technology acceptance model, we have conducted interviews with 15 secondary school teachers. The results indicate that, other than user motivation, three areas, namely "regulations and specifications," "technological infrastructure," and "heterogeneity of students and teachers," affect the adoption of digital tools. The COVID-19 pandemic, which inevitably led teachers to embrace digital tools, positively influenced the perception and immediate usefulness of digital tools.

Teachers in the Lifelong Learning Process: Examples of Digital Literacy

Potyrala, Katarzyna; Tomczyk, Lukasz . (2021) investigated about the teachers in the lifelong learning process: examples of digital literacy.The text aims at measuring digital literacy among teachers of the third stage of education in Poland (lower secondary schools). The study was commissioned by the Ministry of National Education and was conducted in 2018 in Poland, and involved a group of 484 teachers. The goal of the research was to present the teachers' knowledge and skills related to digital threats in the areas of the assessment of the reliability. Digital literacy was measured using a knowledge and competence test and a diagnostic survey. A detailed analysis of the results also revealed that the teachers obtained good results in the test in terms of their knowledge and image protection but scored poorly regarding copyright and the assessment of the reliability of online information; male teachers know more about the technical aspects of digital safety than female teachers; trainees need particular support in the form of informal and non-formal education.

Fourth Industrial Revolution and Digital Competences of Teachers

Kožuh, Anna; Maksimovic, Jelena; Osmanovic Zajic, Jelena. (2021). investigated a study on thefourth industrial revolution and digital competences of teachers in which the new era of the 4IR requires changes in teachers' initial education and in their professional advancement. Serbia is a developing country whose institutions of education are technologically underdeveloped and whose expansion in the field of digitalization is still insufficient to be on par with the developed western countries. The authors' research goal was to determine whether potential improvement in teachers' digital competences has occurred. The general hypothesis postulated implied a low level of the use of digital tools in schools on the territory of Serbia. The descriptive method and scaling technique were used. The research results show that science and technology teachers apply digital tools while teaching more frequently than the teachers of social sciences and humanities. The research implies that a strategic approach to Serbian teachers' digital education is necessary even during their undergraduate studies by introducing digital technology courses and subjects in the conventional academic curricula.

Secondary School Teachers Self-Perception of Digital Teaching Competence in Spain Following COVID-19 Confinement

Prieto-Ballester, Jorge-Manuel; Revuelta-Domínguez, Francisco-Ignacio; Pedrera-Rodríguez, María-Inmaculada (2021) investigated on Secondary School Teachers Self-Perception of Digital Teaching Competence in Spain Following COVID-19 Confinement. The purpose of this study focuses on education system that has become even more complex following the global pandemic, which saw face-to-face teaching transition to virtual teaching. To cope with this abrupt transition, it is essential that teachers have a sufficient level of digital teaching competence. This article aims to increase awareness of teachers' self-

perception of their digital teaching competences in the educational field. From the results of the questionnaires, it is determined that teachers consider themselves to have an upper intermediate level of digital teaching competence, although there are still shortcomings that need to be addressed in order to improve this level of competence, and its true integration in the teaching-learning process.

Digital Labour and Temporal Priorities within a Secondary School

Johnson, Nicola F. (2021) discussed about digital labour and temporal priorities within a secondary school. Digital devices and ubiquitous online access contribute to the nature and amount of digital labour conducted by school staff. Drawing on more than 40 interviews with staff at one Australian secondary school, the general nature of this digital labour is presented, then Clancy's notion of temporal autonomous spaces is introduced and applied to theorise why some teachers used digital technologies constantly in their teaching. The article highlights how some teachers invested their time in learning about and using digital technologies because it enhanced their sense of autonomy and increased their sense of freed time. It theorises how teachers who invest their time into developing their knowledge and effective use of digital technologies in their teaching practice do so because of the perceived benefits that temporal autonomous space brings. Therefore, their practice is sustained as a high temporal priority.

Teachers' Beliefs about the Role of Digital Educational Resources in Educational Practice: A Qualitative Study

Alberola-Mulet, Ivan; Iglesias-Martínez, Marcos Jesús; Lozano-Cabezas, Inés. (2021). analyzed on teachers' beliefs about the role of digital educational resources in educational practice: a qualitative study Teachers play a key role in integrating these

technological resources into the classroom. The objective of the present study was to determine the value that teachers attribute to digital resources in their educational practice. Based on a qualitative methodology, the necessary information was obtained via an open-ended interview, in which a Spanish school's Early Childhood and Primary Education teachers participated. The results revealed that teachers value the integration of digital resources into the classroom, though no consensus was reached as to the suitable level of integration. Certain problems or limitations also came to light, however, linked to students' digital training. An important conclusion according to the perception of teachers is that the integration of digital resources in their educational practice was significant and improved the quality of the educational process.

Digital Transformation in Education: From Vision to Practice during the Pandemic

Feldman, Paul (2021) investigated a study on digital transformation in education: from vision to practice during the pandemic. This contribution addresses the challenges brought on by the pandemic and argues that a forced acceleration in online teaching and assessment practices can become a sustainable model for the post-COVID-19 world. Technology is a great asset that provides learning opportunities for the whole community and the education sector should seek to adopt an innovative approach that "firmly" integrates face-to-face with virtual interaction. The effort to make the most of an unforeseen and challenging situation has brought Jisc's prediction for future learning forward.

Learning, Student Digital Capabilities and Academic Performance over the COVID-19 Pandemic

Hands, Caroline; Elshamaa, Marie (2021) investigated a study on learning, student digital capabilities and academic performance over the covid-19 pandemic. During the time

of COVID-19 lockdown over spring 2020, universities shifted teaching from on-campus blended learning to an emergency remote fully online approach. The aim of this study was to compare Psychology and Veterinary Science undergraduate students' academic performance with their responses on a self-reported questionnaire regarding their digital capabilities, individual's characteristics, and the role of environment on their independent learning process over the first COVID-19 lockdown period. Social-Cognitive Theory was adopted to conceptualize students' behavior, individuals' characteristics, and learning environment with their academic performance to a learning framework. Differences between students' responses were identified due to their discipline's curricular structure, students' study behaviors (i.e., being exposed to unrelated learning activities), and students' cognitive effort to think critically in the search, evaluation and managing of digital information. Students with high level of self-regulation and digital capabilities were able to keep focused and engaged during the lockdown. Although universities and teachers were "forced" to shift their teaching approach due to the unfortunate disruption of the COVID-19 pandemic, most students have coped with the changed teaching delivery mode relatively easy with minimum guidance. However, teachers should further consider how digital technologies could enhance students' learning flexibility promoting critical thinking.

Teaching and Learning Post Pandemic

Munday, Dale (2021) investigated on teaching and learning post pandemic. This article aims to offer one perspective on ways that Lancaster University supported its staff in the rapid shift to online teaching and learning in the midst of a global pandemic. The approach centered on the up skilling of staff, with mixed engagement across the suite of support tools and resources, which can be compared to similar situations in the wider Higher Education (HE) sector. A focus on the future of curriculum design and the associated

requirements at an institutional- and sector-wide level is addressed in relation to the opportunities and challenges with which we are faced.

Improving the Digital Skills of Older Adults in a COVID-19 Pandemic Environment

Hamzah, N. Hafiza; Nasir, M. Khalid M.; Wahab, Jamalullail Abdul. (2021) investigated on improvingthe digital skills of older adults in a covid-19 pandemic environment. This study says thatthe COVID-19 pandemic has affected the global population, not only in terms of health, but also in the economic, psychosocial, and educational domains. Information and communication technologies (ICT) have been presented as the main currently available solution to reduce the effects of social isolation and for the maintenance of educational activities, as well as basic services like appointments, shopping, etc. However, the older adult population, one of the higher risk groups for COVID-19, is affected by low levels of digital skills, which makes it harder to adapt to the new paradigms imposed by the pandemic. This paper aims to discuss the implications of the COVID-19 pandemic on older adult education, as well as how to develop digital skills in a pandemic scenario.

Effectiveness of Digital Tools to Support Pupils' Reading in Secondary School: A Systematized Review

Chen, Danlei; Macleod, Gale (2021) made a study on the effectiveness of digital tools to support pupils' reading in secondary school: a systematized review. This study speaks about theengagement with reading falls around the age of 11 or 12, and there is widespread concern with levels of literacy amongst adolescents. Most research examines how digital tools facilitate preschoolers' reading or reading motivation outside school. Less research is conducted in the school context, particularly with older pupils. This article reports a

systematized review to investigate the effectiveness of digital tools for supporting reading in secondary schools. Two thousand three hundred ninety-six articles were screened with 10 selected for review. The empirical evidence is examined; definitions of effectiveness, and facilitators and barriers are identified. Findings show the evidence base is varied, but robust; digital tools are effective in motivating adolescents' reading interest, and improving their reading skills and test scores; teachers are key facilitators in the process. Findings are in line with research with younger age-groups suggesting the transferability of research across a wide age-range. Implications for practice and suggestions for developing research in this area are identified.

The Effects of Principals' Digital Leadership on Teachers' Digital Teaching during the COVID-19 Pandemic in Malaysia

Alqabbani, Samiah; Almuwais, Afrah; Benajiba, Nada; Almoayad, Fatmah. *(*2021) investigated on the effects of principals' digital leadership on teachers' digital teaching during the covid-19 pandemic in Malaysia.Education involving digital technology is the latest transformation of the education system, especially during the occurrence of the COVID-19 pandemic. The Malaysian Ministry of Education (MOE) has taken the initiative to spearhead efforts to develop the skills and potential of students in the use of digital technology. The main purpose of this study was to identify the level of digital leadership displayed by principals, the level of teachers' digital teaching practices and the elements of principals' digital leadership that predict the level of teachers' digital teaching. About 400 secondary school teachers in Hulu Langat District, Selangor were involved in this study. The findings of this study show that the level of digital leadership displayed by principals and teachers' digital teaching practice are both at a high level. However, the positive correlation between

the two is moderate. Multiple regression found that only digital citizenship is a strong predictor of teachers' digital teaching. The findings show that the ability to plan and organize digital leadership programs is important and can help improve students' academic performance, despite the COVID-19 pandemic

Readiness towards Emergency Shifting to Remote Learning during COVID-19 Pandemic among University Instructors

Reister, Megan; Rook, Rebecca. (2021) conducted a study on readiness towards emergency shifting to remote learning during covid-19 pandemic among university instructors. This is a cross-sectional study that was conducted to explore readiness with regard to the sudden shift towards emergency remote teaching and its correlation with perceived effectiveness, satisfaction, anxiety and attitudes among instructors in Princess Nourah bint Abdulrahman University (PNU) in response to the COVID-19 pandemic lockdown. Data were gathered using an online questionnaire on readiness and perceptions of effectiveness, attitudes and satisfaction relating to the emergency remote teaching, as well as the anxiety resulting from it. Pearson's test was performed to assess the correlations between different parameters. In conclusion, instructors at PNU were ready to provide emergency remote teaching, which led to high perceived effectiveness and levels of satisfaction, while the high level of anxiety could be attributed to stressful circumstances related to the COVID-19 pandemic.

Embarking Digital Learning Due to COVID-19: Are Teachers Ready?

Aditya, David Sulistiawan (2021) investigated on Embarking Digital Learning Due to COVID-19: Are Teachers Ready?. The COVID-19 pandemic has resulted in school closures all over the globe and forced students to embark on digital learning to ensure learning

continuity. The implementation of digital learning on educational settings has posed challenges particularly for developing countries to improve human resources and infrastructure. On this basis, this study explores the teacher readiness in conducting digital learning in Yogyakarta, Indonesia. This exploratory study employed an online questionnaire and semi-structured interviews via either voice or video calls to safely gather data from K-12 teachers of 27 different schools in the middle of the pandemic in Yogyakarta. This study found that the teachers perceived they were psychologically, technologically, and pedagogically ready to conduct digital teaching and learning. This study also discovered that the digital learning problems were mostly encountered by teachers in rural areas. Another problem was generated from the different levels of students' affordance of technology that mainly led to digital learning inequality. Therefore, this study proposed an alternative choice of technology and teaching methodology to adopt and to adjust as a solution to the occurring learning problems. In addition, it also discussed the teachers' perceptions of digital learning.

COVID-19's Impact on Higher Education: A Rapid Review of Early Reactive Literature

Khan, Muzammal Ahmad (2021) in his rapid systematic review aims to examine emerging evidence on the effects of COVID-19 on educational institutions and assess the prevalence of e-learning changes in the sector. This paper reviews literature on learning, teaching, and assessment approaches adopted since the COVID-19 outbreak, and assesses the impact on the sector, staff, and students, summarizing findings from peer-reviewed articles. It categorizes these into five key themes: (1) digital learning; (2) e-learning challenges; (3) digital transition to emergency virtual assessment (EVA); (4) psychological impact of COVID-19; and (5) creating collaborative cultures. This represents the first systematic review of COVID-19's impact on education, clarifying current themes being investigated. The author

suggests that the term 'emergency virtual assessment' (EVA) is now added for future research discussion. Finally, the paper identifies research gaps, including researching the impact on lesser developed countries, the psychological impact of transition, and the important role of leadership and leadership styles during the transition and handling of the pandemic.

Effectiveness of Digital Tools to Support Pupils' Reading in Secondary School: A Systematised Review

Chen, Danlei; Macleod, Gale. (2021) investigated about the effectiveness of digital tools to support pupils' reading in secondary school: a systematized review. This study aim on the engagement with reading falls around the age of 11 or 12, and there is widespread concern with levels of literacy amongst adolescents. Most research examines how digital tools facilitate preschoolers' reading or reading motivation outside school. Less research is conducted in the school context, particularly with older pupils. This article reports a systematized review to investigate the effectiveness of digital tools for supporting reading in secondary schools. Two thousand three hundred ninety-six articles were screened with 10 selected for review. The empirical evidence is examined, definitions of effectiveness, and facilitators and barriers are identified. Findings show the evidence base is varied, but robust; digital tools are effective in motivating adolescents' reading interest, and improving their reading skills and test scores; teachers are key facilitators in the process. Findings are in line with research with younger age-groups suggesting the transferability of research across a wide age-range. Implications for practice and suggestions for developing research in this area are identified.

Self-Reflection of Digital Literacy of Primary and Secondary School Teachers: Case Study of Slovakia

Záhorec, Ján; Hašková, Alena; Munk, Michal (2021) investigated a study on self-reflection of digital literacy of primary and secondary school teachers of Slovakia. This study aims on the development of new digital means requires teachers to dispose such level of didactic technological competences to be prepared properly to implement them into their teaching practice and to be not afraid to use them within their lessons. These facts evoke a need continuously to innovate curricula of the relevant part of teacher trainee study programs, to acquaint future teachers with the newest kinds and versions of available didactic tools and with advantages of their use to support both teaching and learning processes. The paper presents a case study the aim of which was to assess level of the digital literacy of primary and secondary school teachers in Slovakia based on their self-reflection. Research sample of the case study consisted of 173 teachers, participants of teacher continuous education, representing three of eight regions of Slovakia. The teachers were asked to assess level of their digital literacy in relation to 17 of selected software applications used in teaching practice, i.e. to assess how skilled they are to use these means in their own teaching practice. Analysis of the teacher self-reflection was done in dependence on their majors (subjects they are qualified to teach) and teaching staff category they belong to. Results of statistical analysis of the collected data pointed out some important facts that should be reflected in innovations of the relevant area of curricula of teacher study programs at universities, or also in programs of further education of in-service teachers. However, data collection to the presented research was carried out before the corona pandemics. Nowadays, when under the corona pandemics conditions education is moving into the virtual reality and dominantly using on-line forms we see that even more important than to train teachers to use digital technologies in general is to train them to work

Secondary School Teachers Self-Perception of Digital Teaching Competence in Spain Following COVID-19 Confinement

Pedrera-Rodríguez, María-Inmaculada (2021) investigated on Secondary School Teachers Self-Perception of Digital Teaching Competence in Spain Following COVID-19 Confinement. The education system has become even more complex following the global pandemic, which saw face-to-face teaching transition to virtual teaching. To cope with this abrupt transition, it is essential that teachers have a sufficient level of digital teaching competence. This article aims to increase awareness of teachers' self-perception of their digital teaching competences in the educational field. Specifically, this study explores Spanish secondary school teachers' knowledge and use of different ICT tools by evaluating their competence based on different areas proposed by The National Institute of Technology and Professional Development (Instituto Nacional de Tecnologías Educativas y de Formación del Profesorado, INTEF), Madrid, Spain. From the results of the questionnaires, we have determined that teachers consider themselves to have an upper intermediate level of digital teaching competence, although there are still shortcomings that need to be addressed in order to improve this level of competence, and its true integration in the teaching-learning process.

Exploring Technology Professional Development Needs of Digital Immigrant Teachers and Digital Native Teachers in China

Li, Yi; Wang, Qiu; Lei, Jing (2020) this study examined if professional development needs of digital natives and immigrant teachers differed for technology integration in a Chinese education setting. Quantitative and qualitative data was collected from 500 teachers at six schools in China. The digital native teachers and immigrant teachers were compared in terms of their different technology use behaviors and integration skills. The findings indicated that even though the digital native teachers had greater comfort with basic

technology than the digital immigrant teachers, they still required training for effective integration of technology in their teaching. The digital immigrant teachers needed more basic technology operations training connections between technologies and teaching. Future technology professional developments in developing countries should: 1) consider the different needs of digital native teachers and digital immigrant teachers; 2) prepare them to make meaningful connections between technologies and their teachings; and 3) adopt individual coaching with on-site designated specialists.

Teaching with Digital Technology

Robutti, Ornella; Thomas, Mike (Dec 2020) in this survey paper, describe the state of the field of research on teaching mathematics with technology with an emphasis on the secondary school phase. We synthesize themes, questions, results and perspectives emphasized in the articles that appear in this issue alongside the relevant foundations of these ideas within the key journal articles, handbooks and conference papers. Our aim is to give an overview of the field that provides opportunities for readers to gain deeper insights into theoretical, methodological, practical and societal challenges that concern teaching mathematics with technology in its broadest sense. Although this collection of articles was developed prior to the global coronavirus pandemic, we have taken the opportunity to survey the contributing authors to provide some country perspectives on the impact the pandemic has had on mathematics teaching with technology in the period January-July 2020. We conclude the survey paper by identifying some areas for future research in this increasingly relevant topic.

Leading in a Digital Age: Digital Leaders' Impact on the Professional Development Culture in a Secondary School Setting

England, Kayla R. (2020) investigated a study on leading in a digital age: digital leaders' impact on the professional development culture in a secondary school setting. The data analysis procedure in this study was multi-step and addressed the five research questions. A convergent-mixed design approach was used to capture both quantitative and qualitative data through the theoretical lens of Adult Learning Theory. This research was conducted on the campuses of four rural high schools within 90 minutes of Kansas City where two principals had a presence on social media, and two principals did not have a presence. Data was collected through four principal interviews and 100 teacher surveys. Lastly, the researcher collected survey data from 30 higher education pre-service professors who are actively teaching within their institutions pre-service leadership programs. Qualitative analysis found three recurring themes: "Professional learning in the digital age, social media in schools, and lack of preparation and training at the preservice leadership level

WebGIS Implementation and Effectiveness in Secondary Education Using the Digital Atlas for Schools

De Miguel González, Rafael; De Lázaro Torres, Maria Luisa. (2020) induced a study on webgis implementation and effectiveness in secondary education using the digital atlas for schools. The Digital Atlas for Schools is an innovative WebGIS development contributing to the use of geospatial information in schools. Based on a story map tool, it creates a geography curriculum constructed on ArcGIS Online. This article discusses the implications of implementing geospatial technologies so that learners can acquire spatial thinking and geographical knowledge, but also develop responsible and active spatial citizenship. Based on the learning progression approach, it presents results showing the effectiveness of this

instructional resource, both for secondary school students and for geography teachers in training. The article concludes with a discussion on how results confirm the need for geospatial technologies to be better incorporated into the geography curriculum at secondary schools.

Using an Ethos of Care to Bridge the Digital Divide: Exploring Faculty Narratives during a Global Pandemic

Goin Kono, Kari; Taylor, Sonja (2020) conducted a study on using an ethos of care to bridge the digital divide: exploring faculty narratives during a global pandemic.Prior to the COVID-19 emergency, some faculty resisted the move to digital learning formats due to concerns for student equity or that engagement would suffer. The purpose of this study was to understand how faculty adapted their courses during the rapid shift to remote and online learning in the spring of 2020, and to understand the role of equity in their experiences. Faculty narratives revealed that elements such as flexibility, reducing coursework to essential content, and personalization--all stemming from an ethos of care - were effective in mitigating the equity issues that surfaced during the emergency transition to universal remote learning. Our findings support the critical importance of extending culturally sustainable practices to all online learning environments in higher education as a way to mitigate equity issues related to the digital divide. These findings are in line with, and contribute to, the growing body of research on culturally sustaining pedagogy within the context of online learning

The Effects of Perceived Leadership Styles and Emotional Intelligence on Attitude toward Organizational Change among Secondary School Teachers

Mukhtar, Nusrah Ahmad; Fook, Chan Yuen. July (2020) investigated about the effects of perceived leadership styles and emotional intelligence on attitude toward organizational change among secondary school teachers. This study employed a descriptive-correlational research design to investigate the relationships of perceived leadership styles and emotional intelligence on attitude toward organizational change in Malaysian secondary school context. The study involved a total of 360 teachers chosen randomly from five secondary schools in Selangor. The study was conducted based on the three-stage planned change from Lewin's (1947). This study only focuses on the unfreezing stage as a guide to study the potential relationships of the three research variables. The conceptual framework of this study proposed an impact of leadership styles and emotional intelligence on the attitude toward organizational change. The correlation analysis shows that leadership styles and emotional intelligence are positively linked to attitude toward organizational change. Basically, the findings have practical implications toward the improvement of principals' leadership and enhancement of emotional intelligence of teachers. Besides, it also has implications on the attitude toward organizational change in Malaysian education system.

Social, Innovative and Deep: Exploring Digital Literacies in a Year 9 English Classroom

Colton, Jill. (2020). In his Changing English: Studies in Culture and Education, speaks about Social, Innovative and Deep: Exploring Digital Literacies in a Year 9 English Classroom. In this study he examines how are teachers who identify as "digital literacy trailblazers' exploring and experimenting with digital tools in their English classrooms? Based on a study of English teaching with digital tools, this paper draws on the case of one

secondary school teacher and her year 9 class. The case is presented in order to discuss digital literacy practices in the context of English curriculum and pedagogy.

Influences on Proactive Classroom Management: Views of Teachers in Government Secondary Schools, Queensland

Hepburn, Lorna; Beamish, Wendi (2020). Investigated on theinfluences on proactive classroom management: views of teachers in government secondary schools, Queensland. This study mainly aims on the proactive classroom management is associated with increased teacher wellbeing and improved student learning outcomes. Yet research indicates that many teachers over-report and underuse practices associated with this approach. The research findings reported here were drawn from semi-structured interviews conducted with 26 government secondary school teachers in Queensland, Australia. These teachers favoured a classroom management approach based on establishing positive relationships with students, but they raised challenges related to cultivating student engagement, meeting the diverse needs of learners and adherence to school disciplinary procedures. Although they felt generally confident with classroom management and were relatively satisfied with student behaviour, they identified a need for better initial teacher preparation, improved induction support and opportunities for ongoing professional development for classroom management.

A Review of Research Exploring Teacher Preparation for the Digital Age

Starkey, Louise (2020) conducts a review of research exploring teacher preparation for the digital age. Digital technologies and the Internet are increasing in prominence in schooling systems. As schools and teaching evolve as a result of the integration of technologies teacher preparation will also change. This paper examines research exploring the preparation of teachers for the digital age through a systematic literature review of articles

published between 2008 and 2018. The findings provide insight into what has and has not been studied across a range of literature and the alignment with the broader context of digital integration in schools. A focus on digital competencies was identified which was framed in three ways across the literature; generic digital competence, digital teaching competence and an emerging concept of professional digital competence. How student teachers learn to engage in the professional work of a teacher in a digitally infused education system should underpin future research. A model of professional digital competence is proposed.

Embracing Digital Technology in Science Classrooms--Secondary School Teachers' Enacted Teaching and Reflections on Practice

Walan Susanne, June (2020) , in Journal of Science Education and Technology, investigated about theembracing digital technology in science classrooms--secondary school teachers' enacted teaching and reflections on practice.The aim of this case study was to investigate what happens in science classrooms when teaching is almost entirely based on the use of digital technology. Data were collected through eight observations of interviews with the teachers. For analysis, a modified version of the Technological Pedagogical and Content Knowledge framework was used. The results showed the science teachers' general approach in the classroom and revealed that they were self-confident in using digital technology, and utilized predetermined digital study material and, when it was felt necessary, supplemental materials. The teachers were positive about using digital technology since they thought it motivated their students and made assessment easier. The teachers claimed that digital technology had improved their teaching, providing more breadth because of access to varied digital tools; teaching had also become more individualized. Few differences were identified between different lessons, whether in physics, chemistry or biology, and unfortunately the identified relationship between the use of digital technology and content knowledge was

limited. The teachers also reflected on the challenges they faced, especially in supporting low-achieving students and effectively using inquiry-based teaching through digital technology. Despite some acknowledged limitations, the study enhances our knowledge about how the Technological Pedagogical Content Knowledge framework can be used as an analytical tool in authentic teaching, with specific contexts and, above all, when education is largely based on the comprehensive use of digital technology rather than its occasional integration.

Digitalization of Education in Modern Scientific Discourse: New Trends and Risks Analysis

Frolova, Elena V.; Rogach, Olga V.; Ryabova, Tatyana M. (2020) investigated on digitalization of education in modern scientific discourse: new trends and risks analysis.This paper presents the results of systematic review of modern scientific publications devoted to the digitalization of education. A review of Russian and foreign studies allows us to conclude that there is a relationship between high academic performance of students and the use of digital technologies. Other advantages of digitalization are: expanding the boundaries of "self-directed learning", developing leadership in the pedagogical environment, creating conditions for the formation of individual educational trajectories of students, modernizing tools for assessing student knowledge, and also differentiating forms and methods for teaching. Based on a critical analysis of publications on this topic, the possible destructive consequences of digitalization of education are determined: ousting experienced teachers with insufficient digital competence from the educational space; information overload; an increase in cognitive distortions; a decrease in the effectiveness of training regarding the formation of interpersonal communication skills of students; the deepening of digital divide; the formalization and dehumanization of education. The paper substantiates the conclusion

that digital technology is a necessary, but at the same time, insufficient condition for improving the quality of educational work and morale building activities. Based on the analysis of scientific publications, the authors determine the principles of digitalization of education: the formation of institutional conditions for supporting digital innovations, the consideration of situational factors, the resource support of educational organizations, and the priority of personal interests (subject-centered approach).

Development of Digital Intelligence among Participants of Inclusive Educational Process

Solovieva, Olga Vladimirovna; Palieva, Nadezhda Andreevna; Borozinets, Natalia Mikhaylovna; Kozlovskaya, Galina Yuryevna; Prilepko, Julia Vladimirovna Aug (2020). Journal of Educational Psychology Propositos y Representaciones, conducted a study on thedevelopment of digital intelligence among participants of inclusive educational process. This study analyzes the problem of the development of digital intelligence among participants of inclusive educational process in the context of the global digitalization of modern society. The level of development of this problem is described. A brief analytical review of scientific research of digital educational environments and digitalization of education is presented. The features and advantages of this innovative approach are demonstrated. The risks for the mental and personal development of students in the transition of modern education to digital format are listed. The results of a pilot research of the development of the main components of digital intelligence among participants in an inclusive educational process (teachers, students and their parents) are presented. A model of the targeted development of digital intelligence in the practice of an inclusive educational organization is proposed.

Digital Divisions: How Schools Create Inequality in the Tech Era

Rafalow, Matthew H. (2020) investigated on digital divisions: how schools create inequality in the tech era. In the digital age, schools are a central part of a nationwide effort to make access to technology more equitable, so that all young people, regardless of identity or background, have the opportunity to engage with the technologies that are essential to modern life. Most students, however, come to school with digital knowledge they've already acquired from the range of activities they participate in with peers online. Yet, teachers, as Matthew H. Rafalow reveals in "Digital Divisions," interpret these technological skills very differently based on the race and class of their student body. While teachers praise affluent White students for being "innovative" when they bring pre existing and sometimes disruptive tech skills into their classrooms, less affluent students of color do not receive such recognition for the same behavior. Digital skills exhibited by middle class, Asian American students render them "hackers," while the creative digital skills of working-class, Latinx students are either ignored or earn them labels troublemakers. Rafalow finds in his study of three California middle schools that students of all backgrounds use digital technology with sophistication and creativity, but only the teachers in the school serving predominantly White, affluent students help translate the digital skills students develop through their digital play into educational capital. "Digital Divisions" provides an in-depth look at how teachers operate as gatekeepers for students' potential, reacting differently according to the race and class of their student body. As a result, Rafalow shows us that the digital divide is much more than a matter of access: it's about how schools perceive the value of digital technology and then use them day-to-day.

Preparing Students for Digital Era Careers

Stange, Melissa (2020) investigated on Preparing Students for Digital Era Careers. This paper will discuss why technical skills alone will not be enough for students to have successful careers in the digital age. Much of their success will hinge on critical soft skills, such as adaptability, inner strength, holistic thinking, and a collaborative spirit. Examples will be provided for inclusion with a computer science program, but in a way that is easily adaptable to other disciplines.

Towards the Acquisition of Digital Instructional Resources for Effective Teaching in the 21st Century Classroom in Public Secondary Schools in Cross River State

Ukah, Julius (2020) investigated towards the acquisition of digital instructional resources for effective teaching in the 21st century classroom in public secondary schools in cross river state.The study was on the influence of acquisition of digital instructional resources on the teaching effectiveness of mathematics teachers in public senior secondary schools in Cross River State. The findings was that acquisition of digital instruction resources has no significant influence on mathematics teachers' effectiveness in public senior secondary schools in Cross River State. Based on the findings, it was recommended among other things that basic training on the needed skills and knowledge on how best they can deploy and utilize these resources in the classroom.

Competency Profile of the Digital and Online Teacher in Future Education

Ally Mohammed. Apr (2019) investigated acompetency profile of the digital and online teacher in future education. The objectives of the study focuses on education progresses in the digital era and in the Fourth Industrial Revolution, learning will be adaptive and individualized to meet the needs of individual learners. This is possible because of

emerging technology, artificial intelligence, and the internet of things. This study is making significant contribution to future education by identifying forces that are shaping education and developing a competency profile for the digital teacher of the future. The research conducted focus groups and interviews with education experts from six countries to identify the forces shaping education in the future and the competencies required by the digital teacher to function effectively. The Competency Profile for the Digital Teacher (CPDT) can be used to train and orient the digital teacher of the future.

Challenges of Digital and Teacher Training

Barbosa, Gabriela; Aguiar, Ana (2018) conducted a study on the challenges of digital and teacher training. The broad development of digital technologies (TD) and their ubiquity in actual students are factors that cannot be ignored by the school and teacher. The present students were born in the digital era and wish to find in school rich environments in technology, meeting motivations. It is a school's commitment to ensure and to promote quality and expectations in teaching. It is hoped that teachers organize this pedagogical practice in a coherent and balanced process, using digital as a resource to improve the learning environment. The research shows that a factor influencing teachers' adoption of TD results from the technological experiences included in training programs. Therefore, this study examines how teachers integrate TD in pedagogical practice and how initial or continuing training programs influence this use. The study involved primary school teachers and finalist students of master's degrees in education, and was restricted to TD in the Portuguese class. For data collection, we used online questionnaire survey and interviews. The conclusions highlight how teachers' learning influences the effective integration of TD in class. There is a need for a profound didactic-pedagogical intervention in the initial and

continuing teacher training programs, including the knowledge in using TD in school learning.

Digital Inclusion of Secondary Schools' Subject Teachers in Bolivia

Popova, Iskra; Fabre, Gabriela (2017) investigated on digital inclusion of secondary schools subject teachers in Bolivia. The aim of this paper is to provide an overview of the whole process of digital inclusion with focus on the design and implementation of this model. Teachers' adoption of the technology and changes in their skills, attitudes, and beliefs were assessed through the analysis of the qualitative data obtained in focus group discussions and observations, as well as through the quantitative data collected through a longitudinal survey. The results show that the adopted model proved to be a successful complement to the government policy. From persons intimidated by the laptops, the subject teachers became confident users of digital technology capable of creating numerous educational units and interactive teaching tools.

What Do Teachers Know about Digital Safety?

Tomczyk, Lukasz (2016) argues on What Do Teachers Know about Digital Safety? The research objective was to determine the level of digital literacy (DL) among teachers. The scope of DL was narrowed to the issue of the safe use of electronic media. The research was conducted using a competency test and diagnostic survey. The study was conducted in the second half of 2016 in Poland and was commissioned by the Ministry of National Education responsible for the "project. The survey was carried out among 421 lower-secondary school teachers from all over the country. The research results can be generalized at a = 0.95 level. The teachers surveyed showed different levels of DL. The teachers of technical subjects obtained the best results, whereas natural science teachers scored the

lowest. Age was not a determinant of ICT expertise. A low level of DL and safety skills prevailed in the group of teachers who recently began their career in education. The group of beginner teachers in particular should be given educational support. This research also breaks the stereotype that young teachers have much more advanced DL than older teachers.

Let's Talk about Digital Learners in the Digital Era

Gallardo-Echenique, Eliana Esther; Marqués-Molías, Luis; Bullen, Mark; Strijbos, Jan-Willem. (2015) conducted a study on Let's Talk about Digital Learners in the Digital Era. This paper reports on a literature review of the concept of "Digital Natives" and related terms. More specifically, it reports on the idea of a homogeneous generation of prolific and skilled users of digital technology born between 1980 and 1994. In all, 127 articles published between 1991 and 2014 were reviewed. On the basis of the findings, there appears to be no commonly-accepted definition of a "Digital Native". The concept varies among individuals, societies, regions and nations, and also over time. Moreover, there are a number of variables other than age that may help us understand the nature of students' use of digital technologies. The so-called "Digital Native" literature demonstrates that despite students' high digital confidence and digital skills, their digital competence may be much lower than those of their "digital teachers". Given the confusion surrounding "Digital Native" and its affiliates, we propose to unify them under the concept "digital learners".

2.5 Critical Review

A review of prior, relevant literature is an essential feature of any academic project. An effective review creates a firm foundation for advancing knowledge. Digital Intelligence is the ability to acquire and apply digital knowledge, skills, and capabilities encompassing the innovative platforms and compelling services of the digital world. The digital world consists of unique processes, technologies, tools, techniques, methods, and systematic approaches that

we all are knowingly or unknowingly engage and immerse ourselves in our personal and professional lives. This takes us to the critical point that our Digital Intelligence relates to understanding all relationships for these components, sub-components, and elements. It facilitates theory development, closes areas where a plethora of research exists, and uncovers areas where research is needed. It has informed the investigator about the importance of Digital Intelligence among Secondary School Teachers in the Modern Era. The standardized tool used in the studies has provided a guiding principle to put in order a self-made questionnaire to the investigator. Most of the studies were statistically interpreted. The findings are based on the statistical analysis such as mean, standard deviation and t-test. It helps the investigator to adopt an exact technique for the present study.

Survey method is taken up for most of the studies. The investigator be acquainted with virtues and demerits of experimental study and choose the Survey method for the present study. The investigator espouses to collect one hundred fifty samples for the present study to get hold of the findings of the results accurate.

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METHODOLOGY

CHAPTER III

METHODOLOGY

3.1 Introduction

Methodology is an important aspect in any research work. Every research study has its own objectives. The procedure adopted by the research works for the realization of these objectives is known as methodology. The methodology adopted enables the investigator to look at the data in an important way. Educational research methods can be categorized on the basis of end results or goals, data gathering technique, method of data processing, degree of control exercised, draw near source of the data and a number of other considerations.

This chapter covers a comprehensive description of methodology which includes research design, research locals, samples, and sampling technique used in the study as well as instrumentation, research, procedure and complete statistical analysis of the data gathered. This chapter also describes actions to be taken to investigate a research hypotheses and the rationale for the application of specific procedures or techniques, to critically evaluate a study's overall validity and reliability.

3.2 Objectives of the study

- To measure the level of Digital Intelligence on Secondary School Teachers.
- To design and validate the scale on Digital Intelligence.
- To examine the difference in Secondary School Teacher's Digital Intelligence along with its various dimensions with respect to the sub groups of the sample such as Gender, Academic Qualification, Academic Stream, Medium of Instruction , Type of Management, Teaching Experience , computer literacy and pedagogy used for teaching.

3.3Variables of the Study

For the present investigation, the investigator selected an independent and dependent variables

Independent Variable

In research design, independent variables are those that a researcher can manipulate, whereas dependent variables are the responses to the effects of independent variables. Independent variable is stable and unaffected by the other variables which we trying to measure. In the present study, the independent variables are as presented in digital intelligence scale, digital identity, digital rights, digital use, digital communication and digital literacy.

Dependent Variable

Dependent variable depends on other factors that are measured. These variables are expected to change as a result of an experimental manipulation of the independent variable or variables. Teachers' digital intelligence is the dependent variable of the present study.

Background Variables

Background variables are a set of mostly demographic variables, which have to be delivered as mandatory part of the national data sets. The background variables of the present study are gender, academic qualification, academic stream, medium of instruction, type of management, teaching experience, computer literacy, teaching experience and pedagogy used for teaching.

3.4 Design of the Study

Research design is the plan, structure and strategy for investigation conceived so as to obtain answers to the research questions. Research designs are intended to enable the researcher to answer the research questions validly and accurately. The present study has been designed as a Descriptive study.The Digital Intelligence of Secondary School Teachers in the

Modern Era is investigated in the study. The characteristics of teacher's on their Digital Intelligence, information regarding their Digital Identity, Digital Rights, Digital Use, Digital Communication, Digital Literacy and Pedagogy used for teaching are investigated for the study.

3.5 Method of the Study

Normative Survey method is adopted to gather data from secondary school teachers. The term Survey is used for the technique of investigation by a direct observation of a phenomena or systematic gathering of data.

The study is conducted to know the "Digital Intelligence of Secondary School Teachers in the Modern Era". It determines the present trends and solves the current practical problems. It suggests the course of future development helps to fashion many of the tools which we do research and contributes to the advancement of knowledge.

3.6Sample of the Study

Stratified Random sampling technique is used to select the sample for collecting data. It is the basis for other types of probability sampling. In this method of selection, every item has an equal chance to be selected. The sample of the present study consists of 150 secondary school teachers in Coimbatore district.

Table 1

Distribution of sample as per the Demographic Variables

Population variable	Sub variables	N
Gender	Male	58
	Female	92
Academic qualification	Undergraduate	13
	Postgraduate	137
Academic stream	Arts	77
	Science	73
Medium of instruction	Tamil	35
	English	115
Type of management	Government	32
	Private	118
Experience	Below five years	115
	Above five years	35
Computer literacy	Primary level	17
	Higher level	133
Pedagogy used for teaching	Online	142
	offline	8

3.7Tools used for the Study

Based on the various objectives of the present study, the investigator has necessitated the development of the following tools for the data collection. A number of statements were prepared by the investigator. Tools became another major consideration in an educational

research. The instrument employed for the collection of data required for the study of any problem is called tool.

- Digital Intelligence scale was constructed, standardized and validated by the investigator.
- Personal Data Sheet made by an investigator was utilized.

3.8Description of the Tool

Digital intelligence scale

The Digital Intelligence scale was constructed and standardized by the Investigator. It is a self-report measure. The items of the test were largely constructed on the basis to analyze the various factors of digital intelligence on secondary school teachers in modern era. After a thorough review of literature on 'Digital Intelligence' at various levels, the research tool 'Digital Intelligence scale' was conceptualized under five dimensions such as Digital Identity, Digital Rights, Digital Use, Digital Communication and Digital Literacy. Each item in the test has given in five point scale (SA-Strongly agree, A-Agree, N-neutral, D-Disagree, SD-Strongly Disagree). The Digital Intelligence of Secondary School Teachers In the Modern Era has to be measured based on the response. Higher score of any dimension suggests greater effect on digital intelligence of concerned trait; same as lower score on any dimension indicates poor digital intelligence of concerned dimension.

3.9 Descriptions about dimensions of Digital Intelligence

a. Digital Identity

The ability to Create and manage one's own online identity and reputation. This includes understanding one's online personality and managing the short and long term impact of your online presence.

b.Digital Rights

The ability to understand and defend digital rights (to privacy, intellectual property, freedom of expression and protection against hate speech, among others).

c. Digital Use

The ability to Use digital devices and media with ease, including self-monitoring to achieve a healthy balance between one's online and offline life.

d. Digital Communication

The ability to communicate and collaborate with other people using digital technologies and media.

e. Digital Literacy

The ability to find, evaluate, use, share and create content, and develop computational thinking.

3.10 Preparation of Items

Preparation of preliminary draft

The investigator prepared the statement form of items. Utmost care was taken to prepare relevant items that deal with significant ideas of digital intelligence were utilized to find the level of digital intelligence of the selected sample. For the present study, this research

tool was prepared and standardized by the investigator with the guidance of research supervisor.

Expert opinion

The research tool consists of 56 statements. The items with wider range of difficulty were constructed. The draft tool was submitted to various experts who have experience of research tool construction for frank opinion and criticism. All the opinions and suggestions were carefully collected and incorporated in the presentation of the test items for the study. Then the tool was administered with 40 statements selected for the try-out of testing.

Pre-try out

The digital intelligence aspects connected with day-to-day classroom activities of the sample population involved in the study were prepared with the scope of five alternative responses as strongly agree, agree, neutral, disagree and strongly disagree to 56 items in English version. Scoring was done by awarding 5/4/3/2/1 points respectively. Thus, the score for a respondent could range between 56 and 280.

The initial tool in English version of 40 items was administered to 15 secondary school teachers for each item. Language corrections in terms of grammar, terms used and presentation style employed in sentence patterns as well as alternative responses provided were carried out in few contexts and items on the basis of feedback from the response in the scale.

Try-out

The preliminary draft was neatly typed and administered to the selected sample of secondary school teachers. After getting the prior permission from the head of institution, the test was conducted. The Digital intelligence tool containing 40 items were administered among 150 secondary school teachers from Coimbatore with due representation given to the selected

independent variables. The secondary school teachers were given Google forms to register their responses.

Formation of high and low groups

The scale consists of 56 items the score could ideally range between 56 and 280. The score of 150 secondary school teachers were listed in descending order. The top most 27 percentage of the secondary school teachers (32) were termed as high digital intelligence group and bottom most 27 percentages of the secondary school teachers (32) as low digital intelligence t group. Item analysis was carried out by the employment of test of significance of difference between means of the contrast high and low digital teaching groups for each of the 56 items at 0.05 levels. The actual range of the score from the 150 secondary school teachers' was 70 and 115. The middle level 45% of the secondary school teachers was excluded from the analysis. It was done to find out whether any significant difference in particular item in the secondary school teachers of high Digital Intelligence group from low Digital Intelligence group significantly and positively. The number of items which formed significantly and positively discriminating the high and low groups in each dimensions are considered as valid items.

Table 2

Data and result of 't' values and selected items in the Digital Intelligencescale

Item No.	't' Value	LoS	IS	Item No.	't' value	LoS	IS	Item No.	't' Value	LoS	IS
1	1.663	NS	IS	18	1.606	NS	IS	35	1.639	NS	IS
2	1.660	NS	IS	19	1.660	NS	IS	36	1.631	NS	IS
3	1.621	NS	IS	20	1.641	NS	IS	37	1.653	NS	IS
4	1.653	NS	IS	21	1.643	NS	IS	38	1.643	NS	IS
5	1.613	NS	IS	22	1.611	NS	IS	39	1.398	NS	IS
6	1.633	NS	IS	23	1.634	NS	IS	40	1.650	NS	IS
7	1.634	NS	IS	24	1.611	NS	IS	41	1.968	S	IR
8	1.617	NS	IS	25	1.644	NS	IS	42	3.33	S	IR
9	1.666	NS	IS	26	1.633	NS	IS	43	16.7	S	IR
10	1.663	NS	IS	27	1.655	NS	IS	44	1.983	S	IR
11	1.631	NS	IS	28	1.633	NS	IS	45	2.86	S	IR
12	1.651	NS	IS	29	1.622	NS	IS	46	63.74	S	IR
13	1.635	NS	IS	30	1.650	NS	IS	47	7.76	S	IR
14	1.677	NS	IS	31	1.650	NS	IS	48	9.65	S	IR
15	1.611	NS	IS	32	1.984	NS	IS	49	3.333	S	IR
16	1.633	NS	IS	33	1.403	NS	IS	50	4.98	S	IR
17	1.644	NS	IS	34	1.334	NS	IS	51	10.53	S	IR

Where;

Los=Level of Significance

IS=Item Selected

S=Significant

NS=Not Significant

IR=Item Rejected

Table 3

Item analysis:

Dimension	**Item number**	**Total**
Digital Identity	2,9,14,24,25,27,34,40	8
Digital Rights	5,18,23,26,30,31,38,20	8
Digital Use	1,3,11,15,16,17,22,28	8
Digital Communication	4,8,13,21,35,39,37,19	8
Digital Literacy	6,7,10,12,29,32,33,36	8

The final digital intelligence scale having 40 items used for the collection of data with five dimensions is furnished here.

3.11 Scoring procedure

The scoring procedure to assess digital teaching for every item in the scale has five rating choices such as strongly agree, agree, neutral, disagree, strongly disagree. Each statement in the scale has to be encircling any one of the five alternatives given. Scoring was done by awarding 5/4/3/2/1 points respectively. The scale consisted of 40 statements with maximum of 200 and minimum 40 scores

3.12Reliability and Validity According to Ashley Crossman (2019), Reliability is the degree to which a measurement instrument gives the same results each time that it is used, assuming that the underlying thing being measured does not change. There are various types of reliability coefficients. Cronbach's (1951) alpha is one of the most commonly used among them i.e., internal consistency (Hogan, Benjamin & Brezinksi, 2000).It was originally derived by Kuder& Richardson(1937) for dichotomously scored data (0 or 1) and later generalized by Cronbach (1951) to account for any scoring method.

Cronbach's Alpha is calculated by following formula:

Cronbcah's Alpha =k/k-1(1-$\sum s^2y/s^2x$)Where,

k = number of items considered.

$\sum s^2y$ = sum of the item variance.

s^2x = variance of total score.

α =150/150-1(1-16.69/104.24)

α =0.84

George & Mallory (2003) provides the following rules of thumb for:

>0.90: Excellent

0.80 -0.89: Good

0.70 - 0.79: Acceptable

0.60 - 0.69: Questionable

0.50 - 0.59: Poor

<0.50: Unacceptable

The investigator adopted a self made five point rating scale as a tool to validate the development of Digital Intelligence of Secondary School Teachers. Since the tool was constructed by own, the reliability test has been conducted for the new tool designed and the reliability statistics has been shown in the table below:

Table 4:

The reliability statistics:

RELIABILITY STATISTICS		
Cronbach's Alpha	**N of Items**	**Internal Consistency**
0.84	40	Good

3.13 Data collection procedure

Data collection is defined as the procedure of collecting, measuring and analyzing accurate insights for research using standard validated techniques. A researcher can evaluate their hypothesis on the basis of collected data.

3.14 Locale of the study

The data was collected using a questionnaire which was modified after the analysis of the pilot study. The study is based on primary data which was collected from a sample of 150 secondary school teachers in Coimbatore district. After the data collection, the investigator has employed the SPSS for analysis.

3.15Scoring and tabulation

All the responses were scored systematically using scoring keys. The responses for each question are rating from 1 to 5.

Table 5:

Item Scoring

RESPONSE	SCORE
Strongly Agree (SA)	5
Agree (A)	4
Neutral (N)	3
Disagree (D)	2
Strongly Disagree (SD)	1

3.16 Statistical technique used for the study

To test the tenability of the hypotheses formulated for the present study, the following statistical techniques were employed. The statistical techniques used in the study are listed below:

a) Descriptive statistics like Mean, Median, Mode, Standard Deviation, corresponding to each variable were calculated. The primary analysis was conducted to know the nature of distribution of each variable.

b) Test of significance of difference between means was used to test whether the difference is statistically significant.

ANALYSIS AND INTERPRETATION

CHAPTER IV

ANALYSIS AND INTERPRETATION

Analysis involves the verification of the hypothesis or problem analyzing and interpreting the result of study is an exciting task. The means of data collected through the use of various tools, needs to be systemized and organized, that is edited, classified and tabulated before it can serve any worthwhile purpose. The purpose of analysis is to build up a sort of intellectual model were the relationship involved are carefully brought to, so that some meaningful inference can be drawn. This chapter deals with the statistical analysis of the data with reference to the hypotheses. The choice of statistical technique for the data analysis was largely determined by the research hypotheses to be tested. This section is the heart of the research report. The report should be highly organized and divided depending on the number of objectives of the study, each being devoted for presenting the results pertaining to an objective. Interpretation is the way to gain knowledge. Thus the task of analysis is incomplete without interpretation coming into play.

4.1 Hypotheses of the Study

Keeping in mind the objectives proposed in Introduction chapter and in the light of the review of related literature presented in the present study, the following hypothesis were formulated.

$H_{01:}$ There is no significant difference within the dimensions of Digital Intelligence scale among Secondary School Teachers with respect to Gender.

$H_{02:}$ There is no significant difference within the dimensions of Digital Intelligence scale among Secondary School Teachers with respect to Academic Qualification.

H_{03}: There is no significant difference within the dimensions of Digital Intelligence scale among Secondary School Teachers with respect to Academic Stream.

H_{04}: There is no significant difference within the dimensions of Digital Intelligence scale among Secondary School Teachers with respect to Medium of Instruction.

H_{05}: There is no significant difference within the dimensions of Digital Intelligence scale among Secondary School Teachers with respect to Type of Management.

H_{06}: There is no significant difference within the dimensions of Digital Intelligence scale among Secondary School Teachers With respect to Teaching Experience.

H_{07}: There is no significant difference within the dimensions of Digital Intelligence scale among Secondary School Teachers with respect to Computer Literacy.

H_{08}: There is no significant difference within the dimensions of Digital Intelligence scale among Secondary School Teachers with respect to Pedagogy used for teaching post covid era.

4.2 Descriptive Analysis of the Data

Descriptive analysis is used to describe the basic features of the data in the study. They provide simple summaries about the sample and the measures. Together with simple graphical analysis, they form the virtual of any quantitative analysis of data. Description of data is needed to determine the normality of the distribution. Description of the data is necessary as the nature of the techniques to be applied for inferential analysis of the data depends on the characteristics of the data.

Table 6:

Statistical constants of Secondary School Teacher's Digital Identity

	Mean	**Median**	**Mode**	**S.D**
Digital identity	560	556	571	33.759

From the above table it is found that the measures of Secondary School Teachers' Digital Intelligence in way of mean, median, mode and standard deviation are 560,556,571and 33.759 respectively. In this distribution the mean, median and mode fall more or less at the same point. It shows that sample distribution is symmetrical.

Table 7:

Statistical constants of Secondary School Teacher's Digital rights

	Mean	Median	Mode	S.D
Digital rights	50.42	50	50	2.263

From the above table it is found that the measures of Secondary School Teachers' Digital Intelligence in way of mean, median, mode and standard deviation are 50.42,50,50and 2.263 respectively. In this distribution the mean, median and mode fall more or less at the same point. It shows that sample distribution is symmetrical.

Table 8:

Statistical constants of Secondary School Teacher's Digital Use:

	Mean	Median	Mode	S.D
Digital use	49.37	49.5	50	3.021

From the above table it is found that the measures of Secondary School Teachers' Digital Intelligence in way of mean, median, mode and standard deviation are49.37,49.5,50 and 3.021 respectively. In this distribution the mean, median and mode fall more or less at the same point. It shows that sample distribution is symmetrical.

Table 9:

Statistical constants of Secondary School Teacher's Digital Communication:

	Mean	Median	Mode	S.D
Digital communication	352.25	351.5	351	6.430

From the above table it is found that the measures of Secondary School Teachers' Digital Intelligence in way of mean, median, mode and standard deviation are352.25, 351.5,351and 6.430 respectively. In this distribution the mean, median and mode fall more or less at the same point. It shows that sample distribution is symmetrical.

Table10:

Statistical constants of Secondary School Teacher's Digital Literacy:

	Mean	Median	Mode	S.D
Digital literacy	294	294	284	9.22

From the above table it is found that the measures of Secondary School Teachers' Digital Intelligence in way of mean, median, mode and standard deviation are 294, 294, 284 and 9.22 respectively. In this distribution the mean, median and mode fall more or less at the same point. It shows that sample distribution is symmetrical.

4.3 Graphical representation of the data

Distribution of Mean, Median and Mode Of Secondary School Teachers 'Digital Identity, Digital Rights, Digital Use, Digital Communication and Digital Literacy respectively.

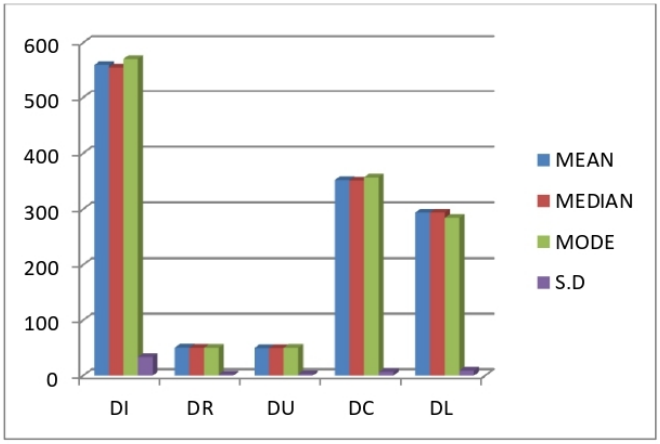

Figure 2

4.4 Hypothesis wise analysis

$H_{01:}$ There is no significant difference within the dimensions of Digital Intelligence scale among Secondary School Teachers with respect to Gender.

Table 11:

Dimensions of Digital Intelligence scale among Secondary School Teachers with respect to Gender.

Dimensions	**Variable : Gender**	**N**	**Mean**	**S.D**	**t- value**
Digital Identity	Male	58	560	33.75	14.83
	Female	92	352.5	20.61	
Digital Rights	Male	58	562.8	15.42	27.47
	Female	92	356.1	14.67	
Digital Use	Male	58	581.1	35.53	13.17
	Female	92	364.5	24.68	
Digital Communication	Male	58	525.1	98.60	4.96
	Female	92	352.2	6.43	
Digital Literacy	Male	58	563.1	15.77	31.63
	Female	92	355.8	9.71	
Overall Value	**Male**	**58**	**2792.6**	**199.07**	**3.682**
	Female	**92**	**1781.2**	**76.1**	

**Significant at 0.05% level

The calculated‘t’ value is higher than the table value. The null hypothesis states that, “There isno significant difference within the dimensions of Digital Intelligence Scale among Secondary School Teachers with respect to Gender”. Hence, the above hypothesis is rejected. It is also evident that the male teachers performed better when compared to female teachers.

DIMENSIONS OF DIGITAL INTELLIGENCE SCALE AMONG SECONDARY SCHOOL TEACHERSWITH RESPECT TO GENDER.

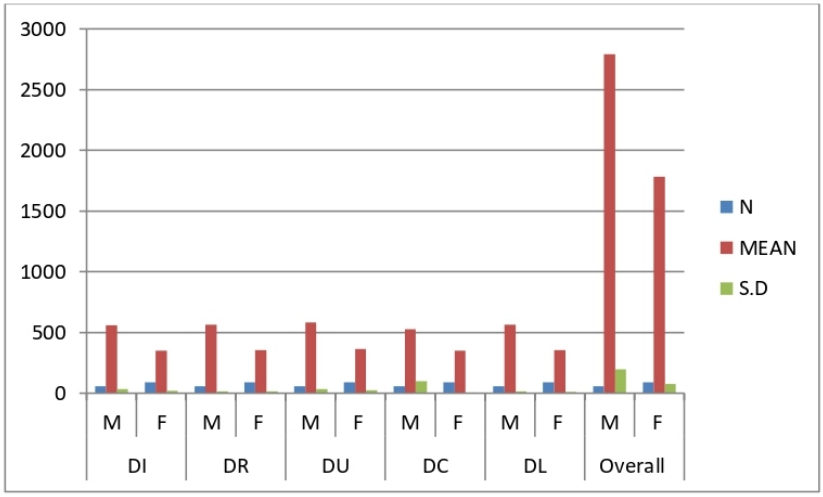

Figure 3:

$H_{02:}$ There is no significant difference within the dimensions of Digital Intelligence scale among Secondary School Teachers with respect to Academic Qualification

Table 12:

Dimensions of Digital Intelligence scale among Secondary School Teachers with respect to Academic Qualification

Dimension	**Variable ; Academic qualification**	**N**	**Mean**	**S.D**	**'t' value**
Digital Identity	Undergraduate Postgraduate	13 137	48.571 511.14	3.02 32.91	-40.33
Digital Rights	Undergraduate Postgraduate	13 137	50.42 519.42	2.263 15.74	-82.84
Digital Use	Undergraduate Postgraduate	13 137	50.857 531.71	2.66 53.29	-26.44
Digital Communication	Undergraduate Postgraduate	13 137	48.85 521.42	3.50 12.68	-108.49
Digital Literacy	Undergraduate Postgraduate	13 137	49 524.14	2.87 14.92	-88.61
Overall value	Undergraduate Postgraduate	13 137	247.6 2607.8	14.31 129.54	-69.342

The above t value represents that, the responses from the postgraduate was lesser than the table value. It can be inferred that there is no significant difference in Digital Intelligence of Secondary School Teachers in Modern Era with respect to Academic Qualification. Hence, the above stated hypothesis is accepted.

DIMENSIONS OF DIGITAL INTELLIGENCE SCALE AMONG SECONDARY SCHOOL TEACHERS WITH RESPECT TO ACADEMIC QUALIFICATION.

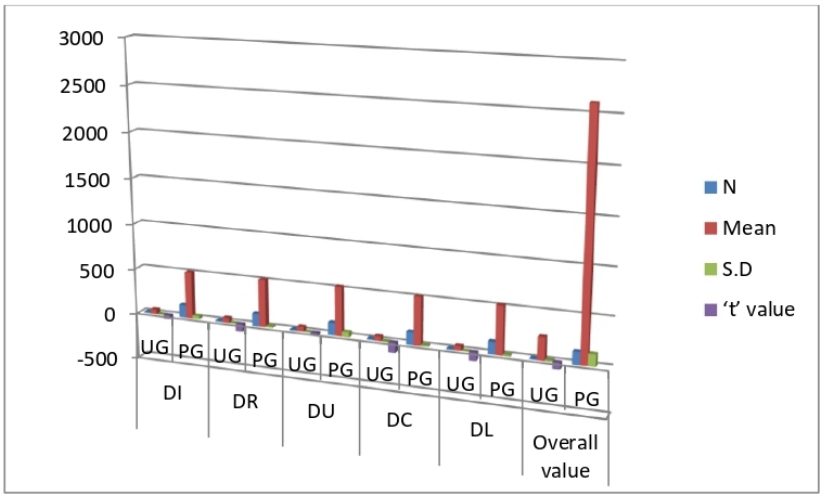

Figure 4:

$H_{03:}$ There is no significant difference within the dimensions of Digital Intelligence scale among Secondary School Teachers with respect to Academic Stream

Table 13:

Dimensions of Digital Intelligence scale among Secondary School Teachers with respect to Academic Stream.

Dimension	**Variable : academic stream**	**N**	**Mean**	**S.D**	**'t' value**
Digital Identity	Arts	77	285.8	18.17	1.38
	Science	73	273.8	17.43	
Digital Rights	Arts	77	291.2	11.01	2.63
	Science	73	278.5	6.96	
Digital Use	Arts	77	300	26.61	1.24
	Science	73	282.4	28.38	
Digital Communication	Arts	77	264.1	39.93	-0.69
	Science	73	277.5	4.71	
Digital Literacy	Arts	77	293.8	9.22	3.20
	Science	73	279.2	8.06	
Overall value	Arts	77	1434.4	104.94	7.76
	Science	73	1391.4	65.54	

**Significant at 0.05% level

The calculated mean value represents that responses from arts teachers was highly significant than the science teachers within the dimensions of Digital Intelligence with respect to Academic Stream. The null hypothesis states that, "There isno significant

difference within the Dimensions of Digital Intelligence Scale among Secondary School Teachers With respect To Academic Stream". Hence, the above stated hypothesisis rejected.

DIMENSIONS OF DIGITAL INTELLIGENCE SCALE AMONG SECONDARY SCHOOL TEACHERSWITH RESPECT TO ACADEMIC STREAM.

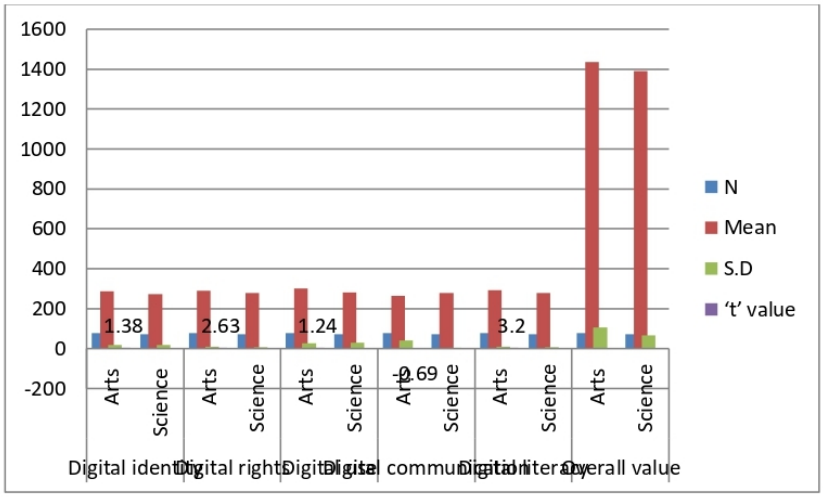

Figure 5

$H_{04:}$ There is no significant difference within the Dimensions of Digital Intelligence Scale among Secondary School Teachers with respect to Medium of Instruction.

Table 14:

Dimensions of Digital Intelligence Scale among Secondary School Teachers with respect to Medium of Instruction

Dimension	**Variable : medium of instruction**	**N**	**Mean**	**S.D**	**'t' value**
Digital Identity	Tamil English	35 115	123.5 436.1	9.58 27.94	-30.59
Digital Rights	Tamil English	35 115	129 441.14	4.06 12.84	-66.11
Digital Use	Tamil English	35 115	129 453.4	11.78 43.19	-21.19
Digital Communication	Tamil English	35 115	127.14 443.14	4.98 11.53	-71.79
Digital Literacy	Tamil English	35 115	126.42 446.71	4.13 14.61	-60.63
Overall value	Tamil English	35 115	635.13 2220.55	34.54 110.12	-50.06

The above t value represents that, -50.06 are lesser than the table value. It can be inferred that there is no significant difference in Digital Intelligence of Secondary School Teachers in the Modern Era with respect to Medium of Instruction. Hence, the hypothesis is accepted.

DIMENSIONS OF DIGITAL INTELLIGENCE SCALE AMONG SECONDARY SCHOOL TEACHERS WITH RESPECT TO MEDIUM OF INSTRUCTION

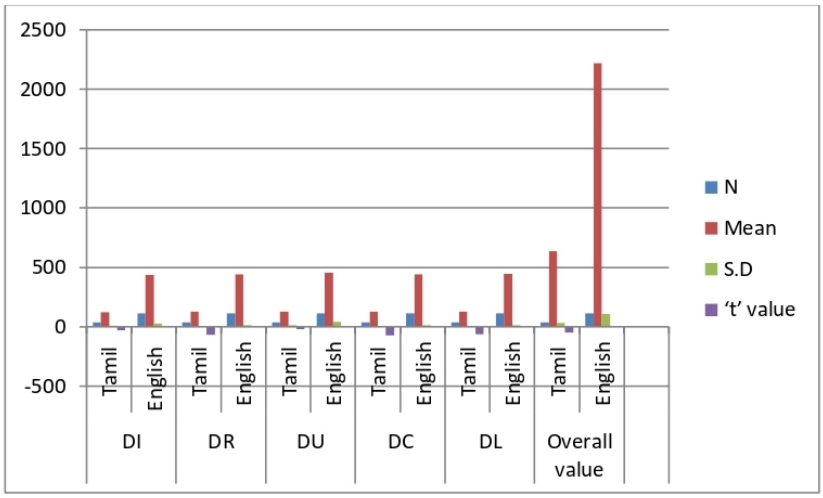

Figure 6

$H_{05:}$ There is no significant difference within the dimensions of Digital Intelligence scale among Secondary School Teachers with respect to Type of Management.

Table 15:

Dimensions of Digital Intelligence Scale among Secondary School Teachers with respect to Type of Management.

Dimension	**Variable : type of management**	**N**	**Mean**	**S.D**	**'t' value**
Digital Identity	Government Private	32 118	120.71 438.57	9.23 28.47	-30.75
Digital Rights	Government Private	32 118	124 445.85	4.39 12.19	-70.58
Digital Use	Government Private	32 118	126.14 456.28	12.31 42.67	-21.64
Digital Communication	Government Private	32 118	123.4 447.1	4.32 11.90	-97.37
Digital Literacy	Government Private	32 118	122.8 450.2	3.53 14.14	-63.33
Overall value	Government Private	32 118	617.1 2238.1	33.79 109.3	-56.71

The above 't' value is lesser than the table value. It can be inferred that there is no significant difference within the dimensions of Digital Intelligence of Secondary School Teachers in the Modern Era with respect to Type of Management. Hence, the hypothesis is accepted.

DIMENSIONS OF DIGITAL INTELLIGENCE SCALE AMONG SECONDARY SCHOOL TEACHERS WITH RESPECT TO TYPE OF MANAGEMENT

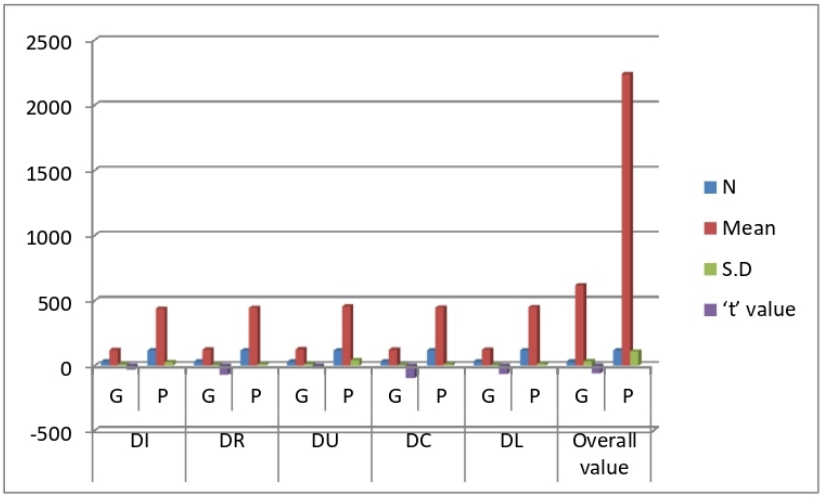

Figure 7

H_{06}: There is no significant difference within the Dimensions of Digital Intelligence Scale among Secondary School Teachers with respect to Teaching Experience.

Table 16:

Dimensions of Digital Intelligence Scale among Secondary School Teachers with respect to Teaching Experience

Dimension	Variable : experience	N	Mean	S.D	't' value
Digital Identity	Above 5 years Below 5 years	115 35	429.8 129.8	25.85 9.76	31.22
Digital Rights	Above 5 years Below 5 years	115 35	437.8 132.4	13.13 4.77	62.34
Digital Use	Above 5 years Below 5 years	115 35	446.14 136.2	44.17 10.77	19.99
Digital Communication	Above 5 years Below 5 years	115 35	438.7 131.5	12.38 3.88	64.73
Digital Literacy	Above 5 years Below 5 years	115 35	441.1 132	12.15 5.92	64.73
Overall value	Above 5 years Below 5 years	115 35	2193.6 66.1	107.6 35.11	64.73

***Significant at 0.05% level

The mean score was highest from the respondents of the teachers above five years of teaching experience than below five years. The differences among the teachers are statistically significant with the't' value 64.73. The null hypothesis states that, "There isno significant difference within the dimensions of digital intelligence scale among secondary school teachers with respect to teacher's experience". Hence, the hypothesis is rejected.

DIMENSIONS OF DIGITAL INTELLIGENCE SCALE AMONG SECONDARY SCHOOL TEACHERS WITH RESPECT TO TEACHING EXPERIENCE.

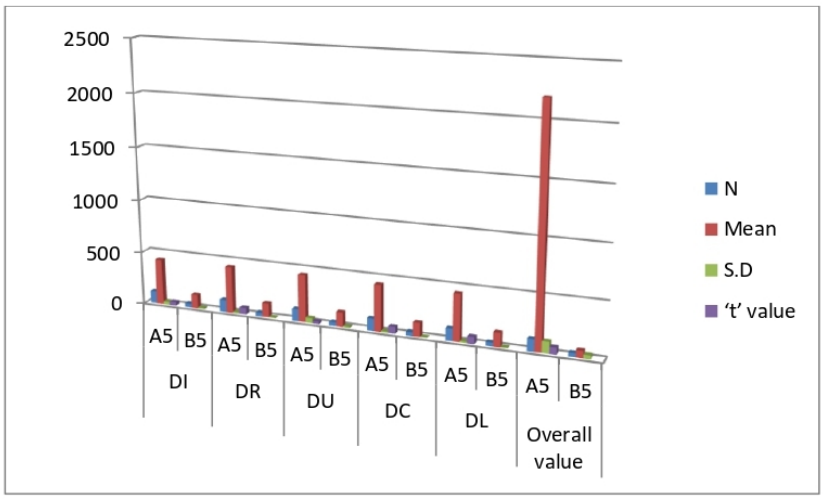

Figure 8:

H_{07}: There is no significant difference within the Dimensions of Digital Intelligence Scale among Secondary School Teachers with respect to Computer Literacy.

Table 17:

Dimensions of Digital Intelligence Scale among Secondary School Teachers with respect to Computer Literacy

Dimension	**Variable : computer literacy**	**N**	**Mean**	**S.D**	**'t' value**
Digital Identity	Primary level Higher level	17 133	81.14 498.57	5.554 29.99	-41.26
Digital Rights	Primary level Higher level	17 133	63.2 506.5	4.71 13.03	-91.07
Digital Use	Primary level Higher level	17 133	66.85 515.5	3.46 51.39	-25.55
Digital Communication	Primary level Higher level	17 133	65.14 505.14	4.35 12.93	-91.6
Digital Literacy	Primary level Higher level	17 133	66 507.14	3.11 16.18	-75.99
Overall value	Primary level	17 133	322.41 2532.99	21.18 123.5	-68.91

	Higher level				

The above 't' value is lesser than the table value. It can be inferred that there is no significant difference within the Dimensions of Digital Intelligence of Secondary School Teachers in the Modern Era with respect to Computer Literacy. Hence, the above stated hypothesis is accepted.

DIMENSIONS OF DIGITAL INTELLIGENCE SCALE AMONG SECONDARY SCHOOL TEACHERSWITH RESPECT TO COMPUTER LITERACY

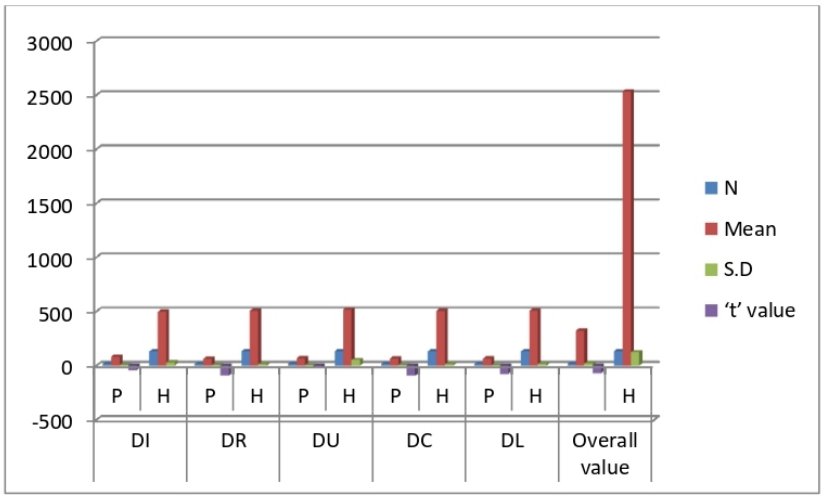

Figure 9

$H_{08:}$ There is no significant difference within the Dimensions of Digital Intelligence Scale among Secondary School Teachers with respect to Pedagogy used for teaching post covid era.

Table 18:

Dimensions of Digital Intelligence Scale among Secondary School Teachers with respect to Pedagogy used for teaching post covid era.

Dimension	**Variable : pedagogy used in teaching**	**N**	**Mean**	**S.D**	**'t' value**
Digital identity	Online Offline	142 8	532.2 27.42	33.05 2.77	43.74
Digital rights	Online Offline	142 8	540.57 29.28	15.56 2.41	92.55
Digital use	Online Offline	142 8	555.14 30.28	53.41 2.50	71.37
Digital communication	Online Offline	142 8	541 29.28	12.57 2.39	113.49
Digital literacy	Online Offline	142 8	543.8 29.2	15.00 1.99	96.32
Overall value	Online Offline	142 8	2712.8 145.5	129.63 12.07	83.47

**Significant at 0.05% level

The calculated't' value is higher than the table value. The null hypothesis states that, "There isno significant difference within the dimensions of digital intelligence scale among

secondary school teachers with respect to pedagogy used in teaching". Hence, the above stated hypothesis is rejected.

DIMENSIONS OF DIGITAL INTELLIGENCE SCALE AMONG SECONDARY SCHOOL TEACHERS WITH RESPECT TO PEDAGOGY USED FOR TEACHING POST COVID ERA.

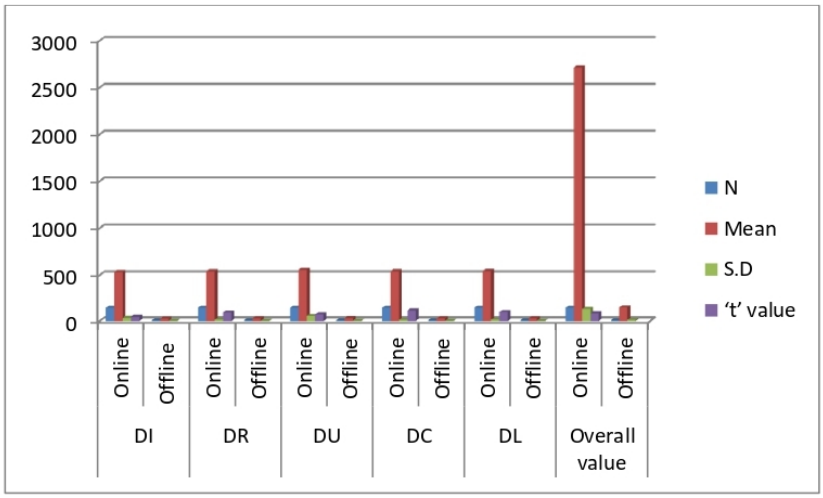

Figure 10

SUMMARY AND CONCLUSION

CHAPTER V

SUMMARY AND CONCLUSION

This chapter provides a brief summary of the entire study and it also gives the interpretation of results, educational implications of the study and suggestions for replicating the study.

5.1 Restatement of the problem

"Digital Intelligence of Secondary School Teachers in the Modern Era"

5.2 Variables in the study

1. The independent variable of the study is Digital Intelligence

2. The dependent variables of the study are Secondary School Teachers.

3. The background variables Are Gender, Academic Qualification, Academic Stream, Medium Of Instruction, Type Of Management , Teaching Experience, Computer Literacy And Pedagogy used for teaching post covid era.

5.3 Design of the Study

The present study has been designed as a Descriptive Study. It is used to describe the nature of a situation as it exists at a time of the study and explores the course of a particular phenomenon. Normative Survey method is adopted to gather data from Secondary School teachers.

5.4 Sample of the study

The Sratified Ramdom sampling consists of 150 Secondary School Teachers in Coimbatore district.

5.5 Tools used in the study

- The Digital Intelligence scale was constructed, standardized and validated by the Investigator.
- Personal Data Sheet made by an Investigator was utilized.

5.6 Statistical techniques used in the study

The statistical techniques used in the study were:

- Mean, Median, Mode and Standard Deviation
- 't' test

5.7Hypothesis of the Study

Keeping in mind the objectives proposed in Introduction chapter and in the light of the review of literature presented in the present study, the following hypothesis were formulated.

H_{01}: There is no significant difference within the dimensions of Digital Intelligence scale among Secondary School Teachers with respect to Gender.

H_{02}: There is no significant difference within the dimensions of Digital Intelligence scale among Secondary School Teachers with respect to Academic Qualification.

H_{03}: There is no significant difference within the dimensions of Digital Intelligence scale among Secondary School Teachers with respect to Academic Stream.

H_{04}: There is no significant difference within the dimensions of Digital Intelligence scale among Secondary School Teachers with respect to Medium of Instruction.

H_{05}: There is no significant difference within the dimensions of Digital Intelligence scale among Secondary School Teachers with respect to Type of Management.

H_{06}: There is no significant difference within the dimensions of Digital Intelligence scale among Secondary School Teachers With respect to Teaching Experience.

H_{07}: There is no significant difference within the dimensions of Digital Intelligence scale among Secondary School Teachers with respect to Computer Literacy.

H_{08}: There is no significant difference within the dimensions of Digital Intelligence scale among Secondary School Teachers with respect to Pedagogy used for teaching post covid era.

5.8Findings of the study

H1:The calculated‘t’ value is higher than the table value. The null hypothesis states that, “There isno significant difference within the dimensions of Digital Intelligence Scale among Secondary School Teachers with respect to Gender”. Hence, the above hypothesis is rejected. It is also evident that the male teachers performed better when compared to female teachers.

H2: The above t value represents that, the responses from the postgraduate was lesser than the table value. It can be inferred that there is no significant difference in Digital Intelligence of Secondary School Teachers in Modern Era with respect to Academic Qualification. Hence, the above stated hypothesis is accepted.

H3:The calculated mean value represents that responses from arts teachers was highly significant than the science teachers within the dimensions of Digital Intelligence with respect to Academic Stream. The null hypothesis states that, “There isno significant difference within the Dimensions of Digital Intelligence Scale among Secondary School Teachers With respect To Academic Stream”. Hence, the above stated hypothesisis rejected.

H4: The above t value represents that, -50.06 are lesser than the table value. It can be inferred that there is no significant difference in Digital Intelligence of Secondary School Teachers in the Modern Era with respect to Medium of Instruction. Hence, the hypothesis is accepted.

H5:The above ‘t’ value is lesser than the table value. It can be inferred that there is no significant difference within the dimensions of Digital Intelligence of Secondary School Teachers in the Modern Era with respect to Type of Management. Hence, the hypothesis is accepted

H6: The mean score was highest from the respondents of the teachers above five years of teaching experience than below five years. The differences among the teachers are statistically significant with the‘t’ value 64.73. The null hypothesis states that, “There isno significant difference within the dimensions of digital intelligence scale among secondary school teachers with respect to teacher’s experience”. Hence, the hypothesis is rejected.

H7: The above ‘t’ value is lesser than the table value. It can be inferred that there is no significant difference within the Dimensions of Digital Intelligence of Secondary School Teachers in the Modern Era with respect to Computer Literacy. Hence, the above stated hypothesis is accepted.

H8: The calculated‘t’ value is higher than the table value. The null hypothesis states that, “There isno significant difference within the dimensions of digital intelligence scale among secondary school teachers with respect to pedagogy used in teaching”. Hence, the above stated hypothesis is rejected.

5.9 Educational Implications of the study

Digitally trained teacher must hold a qualified teaching to increase the quality of the teaching learning process. Motivation and Individualized learning experience uplifts the Digital Intelligence among teachers and students. Unlimited information is mastered by teachers when they are digitally updated and influential characteristics to develop

engaging students digitally. Digital intelligence is needed to promote equal opportunities in a digital world. The past experience of teachers helps to improve the effectiveness of future investments in technology.There is a positive impact on growth and effectiveness of teachers.The digital citizenship is growing.

5.10 Suggestions for Further Research

The present study has been focused on '**Digital Intelligence of Secondary School Teachers in the Modern Era**. The present investigation has directed to the following suggestions for further research.

- Study can be extended by increasing the sample size and geographical area.
- The study can be conducted in different board of schools.
- The study can be conducted separately for school teachers to get to know their views about Digital Intelligence and its effectiveness for school students to teach tough concepts.

5.11 Conclusion

Therefore, ample justification for continuing assessment and evaluation of both old and new methods of teaching and learning and its ability to cope with the funds of accumulating knowledge in numerous fields, and its capacity to respond to technological developments, the digital intelligence is worthy of continuing research and development a means of bringing harmony to educational ends and means in a rapidly changing environment.

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APPENDICES

APPENDIX- I

PERSONAL DATA SHEET

SIVARAHINI.G

2nd M.Ed General,

Department of Education,

Avinashilingam Institute for Home Science & Higher Education for Women,

Coimbatore-641043.

I am doing a thesis on "Digital Intelligence of Secondary school teachers in the Modern Era" as a part of my M.Ed course. I sincerely solicit your timely attention and co-operation in this regard. Kindly give your details and frank responses to the enclosed statements for enriching my thesis work.

Yours faithfully,

G.SIVARAHINI

APPENDIX I

PERSONAL DATA SHEET

1. Name :

2. Gender : Male / Female

3. Name of the school. :

4. Academic Qualification : Undergraduate/Post Graduate

5. Academic Stream : Arts / Science

6. Medium of Instruction : English / Tamil

7. Type of Management : Government / private

8. Teaching Experience : above five years / below five years

9. Computer literacy : primary level/ higher level

10.Pedagogy used in teaching : online/ offline

\APPENDIX II

Please read the following statements about the "Digital Intelligence of Secondary School Teachers in the Modern Era". Indicate your response by selecting on it.

(SA-Strongly Agree, A- agree, N-Neutral, D-Disagree, SD- Strongly disagree)

STATEMENTS:

1.Internet connection is necessity.	SA	A	N	D	SD
2.Personality/identity is different in online when compared to real life.					
3.Internet affects young people's mental health					
4.revolving into a digital body is a good opportunity.					
5. In using technology, guidance of parents and teachers are given importance					
6. Implementing technology increases academic achievement.					
7.Digital learning promotes students collaboration.					
8.Implementing technology does not make classroom management more difficult.					
9. Digital learning is a valuable instructional tool.					

10. Implementing technology enhances professional development.					
11. Implementing technology eases the pressure on teacher.					
12. Implementing technology helps accommodate students' personal learning styles.					
13. Implementing technology motivate students to get more involved in learning activities.					
14.Digital presentation lecture is more engaging.					
15.I am confident when using technology for educational matters.					
16. Digital presentations help to understand the topics easily.					
17. In working with technology, the postures must be given importance like sitting, laying and stooping at desk etc.					
18. Digital intelligence gives students the comfort zone.					
19. Study material distribution is easy in digital era.					

20. Monitoring attendance is easy in digital classes.					
21. Handling queries is an easy task					
22. Evaluation of assignment is an easy task in digital class.					
23. Conducting exams is easy in digital classes.					
24. Multi- tasking can be done easily through digital teaching.					
25. Digital teaching and training is future of education					
26. Experience in teaching students from home is4 when compared to teaching at school.					
27. Teaching students digitally is enjoyable.					
28. Personal devices like cell phone, laptop etc helps in learning.					
29. The quality of educational experience in digital teaching.					
30. Multiple way of presentation (pictures, sounds, examples) encourages learning.					
31. Digital media skills are time consuming.					

32. Ample opportunities of summer internships and live projects can be given by digital learning					
33. Students are retrieving their work from home confidently.					
34. Keeping a record of information in online is easier than in offline.					
35. Digital assessment formats are used to monitor student progress.					
36. Participation in online training courses e.g., MOOCs, webinars. , are increased.					
37. Digital intelligence becomes vital to develop the digital skills and digital profiles.					
38. The goal of educators therefore is to go beyond thinking and excel in a world where digital media are ever present.					
39. Learning is more now than in traditional method.					
40. Presenting yourself online: your digital identity.					