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Assessing the Role of Life Skills in Enhancing Teachers' Techno-Pedagogical Content Knowledge

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Abstract:

The impact of life skills and technologically pedagogical content knowledge (TPACK) on teachers' professional growth is examined in this paper. Effective TPACK integration is built on the basis of life skills, which include communication, critical thinking, problem-solving, cooperation, and digital literacy. By developing these abilities, educators may better integrate technology into the classroom, create engaging learning activities, and modify their lesson plans to suit the requirements of various student groups. Additionally, life skills equip educators to deal with the difficulties of integrating instructional technologies, building a climate of collaboration and ongoing professional development. Incorporating life skills into teachers' TPACK improves their instructional strategies while also fostering their professional and personal development, enabling them to become creative educators capable of preparing students for success in a technologically advanced environment.

It emphasizes the need of giving instructors the knowledge and tools they need to successfully manage the interface between technology, pedagogy, and subject-matter expertise, ultimately enabling students to become proficient users of technology and engaged members of a digital society.

Keywords: Life Skills, Techno-Pedagogical Content Knowledge (TPACK), Professional Growth. Technology Integration And Student Engagement

Introduction:

The use of technology in education is always changing, and it has a significant impact on how teachers engage students and deliver instruction. Teachers must not only be knowledgeable about pedagogy but also have the technical know-how to properly use technological tools in the classroom. Techno-Pedagogical subject Knowledge (TPACK) is the term for this combination of pedagogy, subject knowledge, and technological skill. The importance of life skills in strengthening instructors' TPACK is another crucial factor that

demands emphasis, even though TPACK is the basis for effective teaching. Beyond demands emphasis, even thought a specialized knowledge and technological prowess, life skills cover a wide spectrum of specialized knowledge and technological problem-solving, cooperation, and competencies. Communication, critical thinking, problem-solving, cooperation, and competencies. Communication, critical and according to the abilities that are crucial for success in a variety of personal, adaptability are just a few of the abilities that are crucial for success in a variety of personal, professional, and academic contexts. By incorporating life skills into their lessons, professional, and deductive challenges of the digital age and provide their students educators may better handle the challenges of the digital age and provide their students with compelling learning opportunities.

The purpose of this paper is to investigate the contribution that life skills can make to instructors' TPACK. We aim to identify the ways in which the development and use of life skills might support teachers' digital literacy, pedagogical techniques, and topic knowledge by exploring the relationship between life skills and TPACK. We will clarify the effect of life skills on TPACK and emphasize the implications for teacher education and professional development through a thorough examination of the existing research and studies.

In order to equip teachers with the skills they need to successfully navigate the always shifting educational landscape, it is imperative that they comprehend the relationship between life skills and TPACK. We can develop a generation of educators with the technological know-how as well as the interpersonal skills, critical thinking skills, and adaptability necessary to survive in the digital age by incorporating life skills into teacher training programmes and classroom practices. Through this investigation, we hope to offer insightful information that can guide initiatives for curriculum creation, teacher preparation, and educational policies, ultimately improving the standard of teaching and learning in 21st-century classrooms.

Significance of the Study:

The investigation conducted in this research of how life skills might improve teachers' Techno-Pedagogical Content Knowledge (TPACK) is important since it sheds light on this topic. The study contributes to our understanding of how life skills can help instructors effectively use technology into their educational practices by filling a gap in the literature. The results of this study can guide teacher training initiatives, resulting in the creation of complete curricula that cover both fundamental life skills and technology proficiency. Teachers may improve student results, provide interesting learning experiences, and equip students to succeed in the digital age by incorporating life skills into their teaching methods. In the end, this research may influence activities for curriculum creation, teacher professional development, and educational policy, enhancing the of education and preparing students for success in the 21st century.

Objectives of the Study:

The article explores the connection between life skills like communication, critical thinking, problem-solving, cooperation, and digital literacy and the development of TPACK. The major Objectives are as follows:

1. To analyze how life skills and TPACK interact. It looks at how these abilities offer a foundation for effective technological integration and teaching methods.

- 2. To demonstrate how life skills affect the use of technology in the classroom.
- 3. To investigate the professional development of teachers using life skills and TPACK.
- 4. To emphasize the significance of educating pupils for a digital society.
- 5. In summary, this paper gives a general overview of the goals and purposes for improving teachers' TPACK through the inclusion of life skills. It emphasizes how important it is to give teachers the skills they need to successfully integrate technology, improve teaching methods, and get students ready for success in a technologically evolved environment.

Understanding Techno-Pedagogical Content Knowledge (TPACK):

A framework termed Techno-Pedagogical subject Knowledge (TPACK) emphasizes how technology, pedagogy, and subject knowledge are all incorporated into teaching and learning. It emphasizes the significance of these three elements' proper integration for fulfilling educational experiences while acknowledging the interconnectedness of these three elements.

- Technological Knowledge (TK): Teachers' grasp of various technical tools, equipment, software, and applications is referred to as their technological knowledge (TK), which is a part of TPACK. It requires technical expertise and understanding on how to properly employ technology for teaching.
- Pedagogical Knowledge (PK): Knowledge of instructional tactics, teaching methods, assessment strategies, and classroom management is referred to as "pedagogical knowledge" (PK). It includes understanding how to create engaging learning activities, motivate students, and give feedback.
- 3. Content Knowledge (CK) is the term used to describe instructors' in-depth knowledge of the subjects they teach. It comprises familiarity with the fundamental ideas, theories, rules, and techniques of a given discipline.
- 4. Technological Pedagogical Knowledge (TPK): The term "technological pedagogical knowledge" (TPK) refers to the fusion of educational and technology knowledge. In order to improve teaching and learning, it entails knowing how to choose, create, and incorporate the right technical tools and tactics into instructional practices.
- 5. Pedagogical Content Knowledge (PCK): The junction of pedagogical knowledge and content knowledge is known as pedagogical content knowledge, or PCK. Knowing how to portray and deliver material to students in a relevant and approachable way while taking into account their existing knowledge, misconceptions, and learning requirements is necessary.
- 6. Technological Content Knowledge (TCK): The term "technological content knowledge" (TCK) refers to the fusion of content knowledge with technology knowledge. It entails comprehending how technology can be applied to enhance subject exploration, representation, and communication.
- 7. Techno-Pedagogical Content Knowledge (TPACK): The term "techno pedagogical content knowledge" (TPACK) refers to the fusion of pedagogical

technical, and content knowledge. It highlights how these three elements interact dynamically and how teachers can use technology to improve their pedagogical strategies and deepen students' material understanding.

Through the development of TPACK, teachers can more successfully incorporate technology into their lesson plans, choose the right tools and resources, create engaging and meaningful learning experiences, and aid students in acquiring necessary topic knowledge and skills. The ability to traverse the digital environment and deliver high-quality instruction that prepares students for the challenges of the 21st century requires instructors to have a solid understanding of TPACK.

Importance of TPACK for Effective Teaching:

In the current digital era, TPACK (Techno-Pedagogical Content Knowledge) is crucial for successful teaching. Here are a few justifications for why TPACK is essential:

- 1. Technology Integration: TPACK places a strong emphasis on incorporating technology into instructional strategies. It acknowledges that technology shouldn't be employed as a stand-alone thing but rather as a tool to improve teaching and learning. Teachers may choose, modify, and use the right technology tools and resources to support their instructional goals by having a solid understanding of TPACK.
- 2. Student Engagement: Technology has the ability to greatly boost student participation in the educational process. With the use of TPACK, teachers are given the tools necessary to design engaging, multimedia-rich, and interactive lessons that engage students and encourage participation. Teachers can improve student learning by incorporating technology into their educational practices.
- 3. Differentiated Instruction: TPACK gives teachers the tools they need to adapt their lessons to the various needs of their pupils. Teachers can adapt their teaching approaches to accommodate various learning styles, skills, and interests if they have a solid understanding of content knowledge, pedagogical strategies, and technological integration. In the classroom, inclusion is encouraged and student learning outcomes are improved by this personalized approach.
- 4. Enhanced Content Delivery: By utilizing technology, TPACK enables teachers to impart content knowledge in an efficient manner. Access to a multitude of digital tools, simulations, multimedia content, and real-world examples made possible by technology enhances learning. Teachers can present content in interesting and dynamic ways by carefully integrating technology, leading to greater comprehension and memory retention.
- 5. Collaboration and communication: Collaboration and communication are made easier between students and teachers because to TPACK. Teachers can provide opportunities for students to communicate, share ideas, and have meaningful dialogues by utilizing technology resources including online platforms, discussion boards, video conferencing, and collaborative documents. These group activities foster the critical thinking, communication, and teamwork abilities necessary for success in the twenty-first century.

Lifelong Learning: TPACK equips teachers to continue their own education throughout their lives. It motivates them to keep abreast of new teaching theories, technological developments, and content developments. Teachers may adapt to the constantly changing educational landscape, encourage innovation, and give students engaging, future-focused learning experiences by continuously growing their TPACK.

In conclusion, TPACK is essential for good teaching because it empowers educators to effectively communicate content, engage students, differentiate instruction, facilitate collaboration and communication, and embrace lifelong learning. Teachers can use technology as a potent tool to enhance teaching and learning and better prepare students for success in a quickly changing digital environment by establishing their TPACK.

Challenges and Opportunities associated with developing TPACK

Technological Pedagogical subject Knowledge, or TPACK, is a framework that places an emphasis on how technology, pedagogy, and subject knowledge are all integrated in educational contexts. While there are many opportunities provided by the development of TPACK, there are also a number of difficulties.

TPACK development challenges include:

- Complexity: Creating TPACK calls for a thorough understanding of not only the material being taught (content knowledge), but also successful teaching methods (pedagogical knowledge), as well as how to seamlessly incorporate technology into the educational process. It can be difficult and complex to adequately integrate these three realms while balancing them.
- Training for Teachers: Many teachers do not have access to sufficient professional development opportunities or training to build their TPACK. Teachers require encouragement, education, and time to experiment with new methods and tools in order to successfully integrate technology into the curriculum. The growth of TPACK may be hampered by a lack of access to professional development opportunities and continuing assistance.
- Resistance to Change: In educational contexts, resistance to change is a frequent problem. Due to a variety of factors, including fear of technology, a lack of confidence, or worries about an increased workload, some teachers may be hesitant to adopt technology. The growth of TPACK depends on overcoming this reluctance and encouraging a favourable attitude towards technology integration.
- Opportunities associated with developing TPACK: 4.
- Enhanced Teaching and Learning: TPACK integration presents chances for more interactive and engaging teaching and learning experiences. When technology is intelligently included, it may support active learning, group work, individualized instruction, and linkages to the real world, which will boost student engagement and performance.

- Access to Information and Resources: Beyond the constraints of conventional classroom settings, technology offers a wide range of alternatives for accessing information and resources. By utilizing digital technologies, online platforms, and multimedia materials, teachers may enhance the learning process, expose pupils to a variety of viewpoints, and encourage autonomous exploration.
- Future-ready Learning: TPACK development aids students in gaining the knowledge and abilities required for the twenty-first century. By fostering their digital literacy, critical thinking, problem-solving, and communication abilities, it gets students ready for a world driven by technology. Students are given the tools they need by TPACK integration to succeed in a society that is technologically advanced and changing quickly.
- 8. Collaboration and professional development: The development of TPACK fosters educator collaboration. Teachers can learn from one another's experiences, exchange ideas, and share best practices, fostering a culture of ongoing professional development. Teachers have the opportunity to support one another in the development of TPACK through collaborative learning communities and online networks.

In conclusion, the creation of TPACK raises issues including complexity, teacher preparation, and resistance to change, but it also brings opportunity for improved teaching and learning, access to knowledge and resources, future planning, and educator collaboration. By overcoming these obstacles and seizing the opportunities, technology. pedagogy, and topic knowledge can be successfully integrated in educational environments. Exploring the Concept of Life Skills:

A set of abilities referred to as "life skills" enables people to successfully negotiate and meet the demands and obstacles of daily living. These abilities are necessary for success in a variety of facets of life, such as relationships, job, education, and personal growth, as well as for overall wellbeing and personal development. When considering the idea of life skills, it's important to consider the following points:

- I. Definition and Purpose: Life skills cover a wide variety of competencies that fall under various headings. Common life skills include self-awareness, emotional intelligence, time management, creativity, problem-solving, critical thinking. decision-making, adaptation, resilience, and interpersonal skills. They are frequently regarded as crucial for success, overall wellbeing, and personal growth.
- Benefits and Importance: Life skills are important in many facets of life. They help people overcome obstacles, make wise choices, interact with others effectively, control their emotions, and adjust to changing circumstances. Gaining good life skills can improve one's academic achievement, professional opportunities, interpersonal relationships, self-confidence, stress management, and general quality of life.
- 3. Acquisition and Development: A combination of formal education, experiential Acquisition and Development.

They are frequently developed through a blend of formal education, mentoring, roleplaying, problem-solving in the actual world, and reflection. Parents, guardians, communities, and educational institutions all play a significant part in encouraging the development of life skills in people.

- 4. Integration into Education: As more educational institutions come to understand the value of life skills, they are incorporating them into their curricula. The goal of life skills education is to give students the knowledge, attitudes, and abilities they'll need to meet problems in the real world and grow into contributing members of society. It abilities including leadership, teamwork, communication, critical thinking, and decision-making.
- 5. Application in Real-Life Situations: Life skills aren't just useful in academic environments; there are many real-life situations where they are applicable. These abilities are useful in the workplace, in interpersonal interactions, for one's own well-intricacies of the workplace, work effectively with others, manage conflicts, deal with stress, create goals, make moral decisions, and lead fulfilling lives.
- 6. Life skills are not static: They continue to change and advance over the course of a person's lifetime. These talents can be improved and enhanced via ongoing practice, to changing circumstances depend on lifelong learning and a growth mindset.

In conclusion, life skills cover a wide variety of skills that are necessary for success in all facets of life as well as personal growth and wellbeing. They are essential people to overcome obstacles, make wise judgements, communicate clearly, control their emotions, and adjust to changing situations by developing and fostering their life skills.

Life Skills identified by the United Nations Educational, Scientific, and Cultural Organization (UNESCO):

The set of fundamental life skills is identified by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) as being necessary for people to lead satisfying lives and make contributions to society. According to UNESCO, these fundamental life skills consist of the following:

- Communication and Interpersonal Skills: Communication and interpersonal skills
 are the capacity to speak with others and express oneself clearly. This includes the
 ability to communicate both verbally and nonverbally, to be empathic, and to establish
 and sustain healthy relationships.
- Critical Thinking and Problem-Solving: The ability to think critically, assess data, and reach well-founded conclusions. It entails recognizing problems and finding creative solutions for them, taking into account many viewpoints, and using logical reasoning.

- Self-Awareness and Emotional Intelligence: Understanding oneself, including one's
 emotions, strengths, shortcomings, values, and beliefs, is referred to as self-awareness
 and emotional intelligence. The capacity to control one's emotions, empathize with
 others, and successfully negotiate social circumstances are all parts of emotional
 intelligence.
- 4. Empathy and Cooperation: Understanding and appreciating other people's emotions and viewpoints, as well as being able to work cooperatively in different teams, are qualities of empathy and cooperation. This entails treating others with respect, demonstrating tolerance, resolving problems amicably, and enhancing group dynamics.
- Decision-Making and Critical Evaluation: The abilities required to weigh options, make wise judgements, and take action in the face of consequences. It entails obtaining and evaluating data, assessing options, and coming to ethical conclusions.
- Creative Thinking and Innovation: The ability to come up with novel solutions,
 view problems from several perspectives, and use unconventional thinking. This
 entails encouraging inquiry, accepting ambiguity, and being receptive to new
 opportunities.
- Resilience and coping mechanisms: The capacity to adjust to change, recover from failures, and persist in the face of difficulties. It entails creating coping mechanisms, controlling stress, and upholding an optimistic outlook.
- 8. Digital Literacy: Digital literacy is the ability to utilize technology safely and effectively. This involves knowledge of and proficiency with information, online communication, digital safety, and the use of digital media for navigation and evaluation.

These fundamental life competencies outlined by UNESCO offer a thorough foundation for people to prosper in a world that is changing quickly. They can be used in a variety of areas of life, such as education, employment, interpersonal connections, and personal growth.

Relevance of Life Skills in a Learning Environment:

Life skills are extremely important in the educational setting because they help students become responsible and active citizens in a society that is changing quickly. The following are some critical elements of the value of life skills in education:

- Holistic Development: Beyond academic knowledge, life skills education places a strong emphasis on students' overall development. It recognizes the significance of giving children the abilities, dispositions, and values they need to succeed in various facets of their lives.
- Practical Application: Students are given tools and techniques from life skills that they may use in the actual world. These abilities help kids overcome obstacles, decide wisely, work through issues, and communicate clearly.
- wisely, work through issues, and

 3. Enhancing Academic Performance: In addition to being useful outside of the classroom, life skills also help students do better in school Critical thinking, problem-

- solving, communication, and self-management are just a few of the abilities that students can use to approach their academic work more successfully, which improves learning results.
- 4. Personal and Social Well-Being: Students' personal and social well-being is taken into account in life skills education. It supports the growth of pupils' self-awareness, emotional intelligence, empathy, resilience, and interpersonal skills. These abilities support students' psychological well-being, self-assurance, and general wellbeing.
- 5. Future-ready: As the world changes quickly, students must be ready for the opportunities and challenges that lie ahead. Students that receive life skills training adaptability, creativity, digital literacy, and cooperation. Students can prosper in a changing, interconnected world with these abilities.
- 6. Career Readiness and Employability: Employers now place a higher importance on soft skills than on academic credentials. Workplaces place a great value on interpersonal, collaborative, problem-solving, and critical thinking abilities. Education in life skills improves students' employability and gets them ready for lucrative employment.
- 7. Citizenship and social responsibility: Life skills education promotes civic involvement and responsible citizenship. It encourages the development of virtues like empathy, respect, tolerance, and moral judgement. Students who have developed good life skills are more likely to make meaningful contributions to their communities and behave responsibly in the world.

Overall, it is important and advantageous to incorporate life skills education within the educational framework. Students are given the real-world knowledge, attitudes, and values needed for success in their personal, social, and professional lives in addition to academic knowledge. Students are better equipped to handle life's challenges, make a constructive contribution to society, and lead fulfilling lives through developing life skills.

The Interplay between Life Skills and Techno-Pedagogical Content Knowledge

The interaction between life skills and techno-pedagogical content knowledge (TPACK) emphasizes how technology, pedagogy, and content knowledge are all included into the development of students' fundamental skills. The following are some crucial points about the connection between TPACK and life skills:

- 1. As a Foundation: Life skills serve as the building blocks for the creation and implementation of TPACK. Both life skills and TPACK must include abilities like communication, critical thinking, problem-solving, cooperation, creativity, and digital literacy. With the aid of these abilities, students can use technology efficiently, participate in worthwhile educational activities, and apply what they have learned in practical settings.
- Integration of TPACK for Skill Development: TPACK places a strong emphasis on how well technology can be incorporated into the teaching and learning process.

Through the provision of tools and resources that encourage communication of tools and problem-solving, technology Through the provision of toos and problem-solving, technology cooperation, critical thinking, creativity, and problem-solving, technology cooperation, critical thinking, creativity, and problem-solving, technology eooperation, critical thinking, even used with purpose. With the aid improve the development of life skills when used with purpose. With the aid is improve the development of the skills technology, educators are guided by TPACK to design engaging, realistic learning experiences that promote the acquisition of life skills.

- Learning that is Authentic and Contextual: TPACK integration encourage learning that is Authentic and Contextual and is Consistent with the Development of Life Skills. Teachers can provide meaningful and pertinent learning opportunities that connect to students' interests, past knowledge, and current situations by utilizing technology. As a result, students are better equipped to apply and develop their life skills in real-world circumstances, thereby preparing them for the difficulties and demands of their personal and professional lives.
- 4. Enhancing Engagement and Motivation: TPACK integration improves student engagement and motivation when combined with the development of life skills Students are more likely to be motivated to learn when they are actively engaged in the learning process and can see the relevance and application of their information and abilities. Technology can offer collaborative and interactive learning environments, multimedia resources, and tailored learning opportunities that pique students' interests and encourage involvement. 5. Skill Transferability and adaptation: TPACK
- transferability and adaptation by fostering the development of life skills. Students get transferrable abilities that can be applied beyond specific tools or technologies through using technology in a variety of contexts and subject areas. Their lifelong learning and adaptation in a technology environment that is constantly evolving are fostered as they learn how to adapt to new technologies, critically analyze information, cooperate successfully, and navigate digital environments. In conclusion, the interaction between TPACK and life skills emphasizes how technology, pedagogy, and content knowledge are all integrated to help students build critical life skills. Integrating TPACK opens doors for genuine, interesting, and contextually appropriate learning experiences that support the growth of life skills. Effective technology integration allows instructors to raise student motivation, engagement, and skill transfer, setting up children for success in a world that is Conclusion:

A mutually beneficial relationship can be seen when evaluating the contribution A mutually beneficial relationship of life skills to improving teachers' Techno-Pedagogical Content Knowledge (TPACK). of life skills to improving teachers Teems.

The integration of technology, pedagogy, and subject-matter expertise into life skills.

The integration of technology is pedagogy, and subject-matter expertise into life skills. The integration of technology, pedagogy, and serves as a solid foundation. Teachers are better able to build their TPACK and use serves as a solid foundation. Teachers are technology in meaningful ways when they have strong life skills. Teachers may better use technology in meaningful ways when mey nave technology in the classroom when they develop and use life skills including better use critical thinking, problem-solving, and digitar meaning cooperation, with the technology in the classroom when they ueverny technology is the classroom when the classroom when they ueverny technology is the classroom when the classroom when the classroom when they ueverny technology is the classroom when the classr

these abilities, educators may develop student-centered strategies, create interesting learning experiences, and modify their lesson plans to accommodate different learning styles. Additionally, instructors are better equipped to handle the challenges of educational technology integration because to life skills.

They encourage collaboration and teamwork among educators, facilitate efficient communication with students and coworkers, and promote a culture of ongoing professional development. Teachers are more equipped to address the opportunities and challenges of a technologically driven educational landscape by strengthening their TPACK through life skills. They may use technology as a tool to encourage critical thinking, student agency, and active learning, all the while developing the crucial abilities kids need to flourish in the contemporary world.

The inclusion of life skills in teachers' TPACK contributes to their own professional and personal development. They develop into lifelong learners, problemsolvers who can adapt, and creative educators who are prepared to meet the changing requirements of pupils and adopt new technology. The necessity of providing teachers with the knowledge and abilities required to successfully negotiate the junction of technology, pedagogy, and topic knowledge is highlighted by the assessment of the function of life skills in boosting instructors' TPACK. Teachers who build and incorporate life skills into their instruction become catalysts for transformative learning experiences, enabling students to increase their technological literacy and become active members of a quickly References:

- Abbitt, J T .(2014) Measuring Technological Pedagogical Content Knowledge in Pre Service Teacher Education, A Review of Current Methods and Instruments.
- 2. Ajitha Nayar K. and Sharifah Norul Akmar (2020) Technology Pedagogical Content Knowledge (TPCK) and Techno Pedagogy Integration Skill (TPIS) Among Pre-Service Science Teachers- Case Study of a University Based ICT Based Teacher Education Curriculum. Journal of Education and Practice www.iiste.org ISSN 2222-1735 (Paper) ISSN 2222-288X (Online) Vol.11, No.6. https://core.ac.uk/download/pdf/304991505.pdf 2020.
- 3. Anand, S. (2019). Techno-pedagogical competency of faculty members: The present need of higher education. Journal of Current Science, 20(1), 60-65.
- B. Bhattacharjee and K. Deb, "Role of ICT in 21st century's teacher education," International Journal of Education and Information Studies, vol. 6, no. 1, pp. 1-6, 2016.
- B. Courts and J. Tucker, "Using technology to create a dynamic classroom experience," Journal of College Teaching & Learning, vol. 9, no. 2, pp. 121-128, 2012.
- Bala, P., & Tao, I. (2018). An examination of techno-pedagogical competence and anxiety towards the use of instructional aids in teaching among senior secondary school teachers. International Educational Journal, 3(3), 95-114. www.echetana.com

- 7. Bansal .S. (2022) role of techno-pedagogical skills for enhancing teaching and learning. Journal of Positive School Psychology http://journalppw.com 2022, Vol. 6 No. 2, 3785 - 3793. file://JPSP-2022-383+(2).pdf
- 8. Beaudin, L., & Hadden, C. (2004). Developing techno-pedagogical skills in preservice teachers. In J. Nall & R. Robson (Eds.), Proceedings of E-Learn 2004- World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education (pp. 492-498). Washington, DC, USA: Association for the Advancement of Computing in Education (AACE). https://www.learntechlib.org/primary/p/11366/
- 9. Beri, N., & Sharma, L. (2019). A study on technological pedagogical and content knowledge among teacher-educators in Punjab region. International Journal of Engineering and Advanced Technology, 8(5C).
- 10. D. Curtis and M. J. Lawson, "Exploring collaborative online learning," Journal of Asynchronous Learning Networks, vol. 5, no. 1, pp. 21-34, 2001.
- 11. E. M. Mercier and S. E. Higgins, "Collaborative learning with multi-touch technology: developing adaptive expertise," Learning and Instruction, vol. 25, pp. 13-
- 12. Groth, R., Spickler, D., Bergner, J., & Bardzell, M. (2009). A qualitative approach to assessing technological Journal of Education and Practice www.iiste. Vol.11, No.6, 2020 62 pedagogical content knowledge. Contemporary Issues in Technology and
- 13. Harris, J. B., & Hofer, M. J. (2011). Technological pedagogical content knowledge (TPACK) in action: A descriptive study of secondary teachers' curriculum-based, technology related instructional planning. Journal of Research on Technology in Education, 43, 211. doi:10.1080/15391523.2011.10782570
- 14. Harris, J., Phillips, M., Koehler, M. & Rosenberg, J. (2017). TPCK/TPACK research and development: Past, present, and future directions. Australasian Journal of Educational Technology, 33(3), i-viii. https://doi.org/10.14742/ajet.3907
- 15. Hofer, M., & Swan, K. O. (2008). Technological pedagogical content knowledge in action: A case study of a middle school digital documentary project. Journal of doi:10.1080/15391523.2008.10782528 Education,
- 16. Kabakci Yurdakul, H. F. Odabasi, K. Kilicer, A. N. Coklar, G. Birinci, and A. A. Kurt, ")e development, validity and reliability of TPACK-deep: a technological pedagogical 179-200. content knowledge scale," Computers & Education, vol. 58, no. 3, pp. 964–977, 2012.
- 17. Jeyaraj, I., & Ramnath, R. (2018). Techno pedagogical skills among teacher educators
- in relation to certain select variables.

 18. Kontkanen, S. (2018). Starting points of pre-service teachers, technological content knowledge (TPACK): Introducing a proto-TPACK. Kontkanen, S. (2018). Starting point pedagogical content knowledge (TPACK): Introducing a proto-TPACK model pedagogical content knowledge (). (Doctoral dissertation, University of Eastern Finland, Joensuu, Finland). Retrieved (Doctoral dissertation, University of the from http://epublications.uef.fi/pub/urn_isbn_978-952-61-2808-5/index_en.html

skills in y 2004 No. and High ivancolo 1/2/1136 d conten unal o

- 19. M. E. Pierson, "Technology integration practice as a function of pedagogical expertise," Journal of Research on Computing in Education, vol. 33, no. 4, pp. 413-
- 20. M. H. Bhuyan, "Practices of online teaching, learning and assessment of the students of the BSc in EEE programme during the COVID-2019 pandemic," Contemporary Educational Research Journal, vol. 11, no. 2, pp. 14-28, 2021
- 21. M. Koehler and P. Mishra, "What is technological pedagogical content knowledge (TPACK)?" Contemporary Issues in Technology and Teacher Education, vol. 9, no.
- 22. Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. Teachers College Record, 108(6), 1017-1054. 57. MJ Koehler, P Mishra.2008. - Handbook of technological pedagogical content knowledge (TPCK) for educators
- 23. National Curriculum Framework, New Delhi: National Council of Educational
- 24. Niess, M, Lee, K., Sadri, P & Suharwoto, G., (2006) Guiding in-service mathematics teachers in developing a technology pedagogical content knowledge (TPCK). Journal of Technology and Teacher Education.
- 25. Niess, M. L. 2011. Investigating TPACK: Knowledge growth in teaching with technology. Journal of Educational Computing Research, 44(3), 299-317
- 26. P. A. Ertmer, "Teacher pedagogical beliefs: the final Frontier in our quest for technology integration?" Educational Technology Research & Development, vol. 53.
- 27. P. Bala and M. Education, "An examination of techno-pedagogical competence and anxiety towards the use of instructional aids in teaching among senior secondary school teachers," International Educational Journal, vol. 3, p. 20, 2018
- 28. P. Mishra and M. J. Koehler, "Designing learning from day one: a first day activity to foster design thinking about educational technology," Teachers College Record, (in
- 29. Parkash J, Hooda R. (2018). 'A Study of Techno-Pedagogical Competency among Teachers of Government & Private Schools of Haryana State. International Journal of Research, 07(1), http://dx.doi.org/10.24327/ijcar.2018.9306.1532. 9301-9306. Retrieved from
- 30. Qurashi, G. U. D., & Jan, T. (2022). Techno-pedagogical competence of private and government secondary school teachers of Kashmir- A comparative study. International Journal of Indian Psychology, 10(3), 944-953. DIP:18.01.101.20221003, DOI:10.25215/1003.101
- 31. R. Gloria and A. E. Benjamin, "Attitude of teachers towards techno-pedagogy," International Journal of Engineering Technologies and Management Research, vol. 5, no. 4, pp. 87-89, 2018.

- 32. R. Saravanakumar, "Role of ICT on enhancing quality of education," Internati Journal of Innovative Science and Research Technology, vol. 3, no. 12, pp. 717. 2018.
- 33. Rao, S., & Jalajakshi, B. N. (2021). Techno-pedagogical skill: An indispensable for a 21st century classroom teacher. International Journal of Creative Resea Thoughts, 9(3), 1264-1267.
- 34. Sathiyaraj, K., & Rajasekar, S. (2013). The Relationship between the Tech Pedagogical Competency of Higher Secondary School Teachers and th Anxiety towards the Use of Instructional Aids in Teaching. International Journal Teacher Educational Research, 2(12), 7-14.
- 35. Sharma, M., & Sharma, R. R. (2021). Techno-pedagogical skills of teacher traine belonging to arts and science academic streams, Towards Excellence-HRDC, 13(907-916. https://hrdc.gujaratuniversity.ac.in/publication
- 36. Sibananda Sana , Chandan Adhikary , K.N. Chattopadhyay (2018) Explorii Teacher's Techno-Pedagogical Competency to Achieve Process Oriented Skills i Learners: A Multimedia Context. INQUISITIVE TEACHER. Volume V. Issue 1 Exploring Teachers Techno Pedagogical Competency to Achieve Process Oriente
- 37. T. K. R. Singh and S. Chan, "Teacher readiness on ICT integration in teaching learning: a Malaysian case study," International Journal of Asian Social Science, vol 4, no. 7, pp. 874-885, 2014
- 38. Thakur, N. (2015). A study on implementation of techno-pedagogical skills, its challenges and role to release at higher level of education. American International Journal of Research in Humanities, Arts and Social Sciences, 9(2), 182-186.
- 39. Vajargah, K. F., Jahani, S., & Azadmanesh, N. (2010). Application of ICTs in teaching and learning at university level: the case of Shahid Beheshti University. The Turkish Gnline Journal of Educational Technology, 9(2), 33-39,
- 40. Yurdakul, K. (2011). Examining Techno pedagogical Knowledge Competencies of Teachers Based on ICT Usage, Hacettepe Universitesi Egitim Fakultesi Dergisi Journal of Education, 40, 397-408
- 41. Yurdakul, K. (2011). Examining Technopedagogical Knowledge Competencies of Preservice Teachers Based on ICT Usage. Hacettepe Universitesi Egitim Fakultesi
- 42. Zhang Y. A Project-Based Learning Approach to Helping Pre-Service Teachers Develop Technology Competencies, 2000. The Technology Source Archives.

- 32. R. Saravanakumar, "Role of ICT on enhancing quality of education," Internati Journal of Innovative Science and Research Technology, vol. 3, no. 12, pp. 717. 2018.
- 33. Rao, S., & Jalajakshi, B. N. (2021). Techno-pedagogical skill: An indispensable for a 21st century classroom teacher. International Journal of Creative Resea Thoughts, 9(3), 1264-1267.
- 34. Sathiyaraj, K., & Rajasekar, S. (2013). The Relationship between the Tech Pedagogical Competency of Higher Secondary School Teachers and th Anxiety towards the Use of Instructional Aids in Teaching. International Journal Teacher Educational Research, 2(12), 7-14.
- 35. Sharma, M., & Sharma, R. R. (2021). Techno-pedagogical skills of teacher traine belonging to arts and science academic streams, Towards Excellence-HRDC, 13(907-916. https://hrdc.gujaratuniversity.ac.in/publication
- 36. Sibananda Sana , Chandan Adhikary , K.N. Chattopadhyay (2018) Explorii Teacher's Techno-Pedagogical Competency to Achieve Process Oriented Skills i Learners: A Multimedia Context. INQUISITIVE TEACHER. Volume V. Issue 1 Exploring Teachers Techno Pedagogical Competency to Achieve Process Oriente
- 37. T. K. R. Singh and S. Chan, "Teacher readiness on ICT integration in teaching learning: a Malaysian case study," International Journal of Asian Social Science, vol 4, no. 7, pp. 874-885, 2014
- 38. Thakur, N. (2015). A study on implementation of techno-pedagogical skills, its challenges and role to release at higher level of education. American International Journal of Research in Humanities, Arts and Social Sciences, 9(2), 182-186.
- 39. Vajargah, K. F., Jahani, S., & Azadmanesh, N. (2010). Application of ICTs in teaching and learning at university level: the case of Shahid Beheshti University. The Turkish Gnline Journal of Educational Technology, 9(2), 33-39,
- 40. Yurdakul, K. (2011). Examining Techno pedagogical Knowledge Competencies of Teachers Based on ICT Usage, Hacettepe Universitesi Egitim Fakultesi Dergisi Journal of Education, 40, 397-408
- 41. Yurdakul, K. (2011). Examining Technopedagogical Knowledge Competencies of Preservice Teachers Based on ICT Usage. Hacettepe Universitesi Egitim Fakultesi
- 42. Zhang Y. A Project-Based Learning Approach to Helping Pre-Service Teachers Develop Technology Competencies, 2000. The Technology Source Archives.