

Empowering Vocational Education Teachers with Digital Competencies for 21st Century Learning

Preeti Dixit¹, R. Ravichandran²

¹ Assistant Professor, DHSER, PSS Central Institute of Vocational Education, Bhopal, Madhya Pradesh, India

² Associate Professor, DHSER, PSS Central Institute of Vocational Education, Bhopal, Madhya Pradesh, India

Abstract

This article focuses on the empowerment of vocational education teachers with digital competencies for 21st century learning. In today's rapidly changing digital landscape, it is crucial that vocational education teachers possess the necessary skills to prepare students for the workforce. This article discusses the importance of digital competencies in vocational education and examines the current state of these competencies among teachers. Key digital competencies that vocational education teachers need to possess are identified, and strategies for empowering them with these competencies are presented. The article also highlights the challenges and barriers that may hinder the implementation of digital competencies in vocational education and provides case studies of successful implementation. Finally, the article concludes with future directions and recommendations for empowering vocational education teachers with digital competencies to prepare students for the 21st century workforce.

Keyword: Digital skills, Competence, Employability, Education and training.

Introduction

The importance of digital competencies for vocational education teachers

Digital competencies have become essential for vocational education teachers due to the widespread use of technology in today's workplace (Oberländer, M., Beinicke, A., & Bipp, T. 2020). As businesses and industries continue to adopt new technologies and digital tools, vocational education teachers must be equipped with the necessary skills to prepare their students for the demands of the workforce. Digital competencies include a range of skills such as the ability to use digital devices and software, to navigate the internet and social media, to communicate effectively using digital tools, and to integrate digital technology into teaching and learning (Edith Avni 2022). Teachers with strong digital competencies can provide students with relevant and engaging learning experiences that better prepare them for the realities of the digital world. Furthermore, as the COVID-19 pandemic has forced many educational institutions to shift to online and hybrid learning models, digital competencies have become even more critical for vocational education teachers. Teachers must be able to design and deliver effective online learning experiences, create and manage digital resources, and use digital tools for communication and collaboration. Digital competencies are vital for vocational education teachers to equip their students with the skills they need to succeed in the modern workplace and to adapt to the changing landscape of education.

Understanding the 21st century learning landscape

The 21st century learning landscape is constantly evolving, as technology, globalization, and changing societal values shape the way we approach education (Teo, P. 2019). Here are some key aspects of the 21st century learning landscape:

Technology: Technology has transformed the way we learn, from online courses and virtual classrooms to interactive educational apps and games. Technology has also made learning more accessible, allowing students to learn at their own pace and from anywhere in the world.

Collaboration: Collaboration is increasingly emphasized in 21st century learning, as it prepares students for the collaborative work environments they will encounter in their careers. Students are taught to work together on group projects, share ideas, and communicate effectively.

Personalization: Personalization is a growing trend in education, as teachers strive to tailor their lessons to each student's individual needs and learning styles. This may involve using adaptive learning technologies that adjust to each student's pace and level of understanding.

Globalization: The world is becoming more interconnected, and schools are adapting to this trend by offering international education programs and promoting global citizenship. This includes teaching students about different cultures and languages, as well as fostering cross-cultural understanding.

Lifelong learning: The 21st century learning landscape emphasizes the importance of lifelong learning, as the pace of change in society and technology requires individuals to constantly update their skills and knowledge. This means that students are encouraged to develop a growth mindset and a love of learning that will continue throughout their lives.

Overall, the 21st century learning landscape is characterized by a focus on technology, collaboration, personalization, globalization, and lifelong learning. These trends reflect the changing needs of our society and the evolving role of education in preparing students for the future.

The role of vocational education in meeting the needs of the 21st century workforce

Vocational education, plays a vital role in meeting the needs of the 21st century workforce. The world of work has changed dramatically in recent years, and vocational education has evolved to keep pace with these changes (Short, M. N., & Keller-Bell, Y. 2019; González-Pérez, L. I., & Ramírez-Montoya, M. S. 2022). Here are some of the ways vocational education is meeting the needs of the 21st century workforce:

Developing in-demand skills: Vocational education programs are designed to equip students with the skills and knowledge needed for jobs in specific industries. These programs offer hands-on training in areas such as healthcare, technology, construction, manufacturing, and more. By providing targeted training in these high-demand fields, vocational education is helping to meet the needs of employers and the workforce.

Closing the skills gap: One of the biggest challenges facing the workforce today is the skills

gap-the mismatch between the skills employers need and the skills job seekers have. Vocational education programs are helping to close this gap by providing training that is tailored to the needs of specific industries. By focusing on the skills and knowledge that are most in demand, vocational education is helping to ensure that students are prepared for the jobs of today and tomorrow.

Promoting career readiness: Vocational education programs are not just about training for a job - they also promote career readiness by helping students develop a range of skills that are valuable in any workplace. These skills include problem-solving, critical thinking, communication, teamwork, and more. By promoting career readiness, vocational education is helping to prepare students for success in a rapidly changing job market.

Meeting the needs of diverse learners: Vocational education programs are designed to meet the needs of a diverse range of learners, including students with disabilities, English language learners, and students who are not college-bound. By providing hands-on training and real-world experience, vocational education programs offer an alternative path to success for students who may not thrive in a traditional academic setting.

Vocational education plays a critical role in meeting the needs of the 21st century workforce by providing in-demand skills, closing the skills gap, promoting career readiness, and meeting the needs of diverse learners. As the workforce continues to evolve, vocational education will continue to adapt to ensure that students are prepared for success in the jobs of today and tomorrow.

The current state of digital competencies among vocational education teachers

Digital competencies among vocational education teachers vary widely and depend on several factors such as age, prior training, and exposure to technology. In general, younger teachers who grew up with technology tend to be more digitally competent than their older counterparts. However, studies have shown that many vocational education teachers still lack the necessary digital skills to effectively integrate technology into their teaching practices (Kovalchuk, V. I., et al 2022). This can be a significant barrier to providing students with the skills they need to succeed in today's workforce, as many jobs require proficiency in digital tools and platforms. To address this issue, many vocational education institutions are providing training and professional development opportunities for teachers to improve their digital competencies. These initiatives aim to equip teachers with the knowledge and skills they need to effectively integrate technology into their classrooms and prepare their students for the digital workforce.

India has made significant progress in expanding its digital infrastructure, and many vocational education institutions have adopted various digital technologies to enhance teaching and learning (Dar, S. A., & Nagraath, D. 2022). However, the level of digital competency among vocational education teachers in India can vary widely, and many may not have the necessary digital skills to effectively integrate technology into their teaching. Several studies (Dhawan, S. (2020); Kebritchi et al., (2017); United Nations Children's Fund, 2021) and our observations during various teachers training programmes suggest that vocational education teachers in India face significant challenges in developing their digital competencies due to factors such as lack of access to technology, inadequate training and professional development opportunities, and a lack of support from school leadership. The government of India has taken several initiatives to promote digital literacy and skills development among teachers, including the launch of the Digital India program and the National Digital Literacy Mission (Panagariya, A. 2022). The National Skill Development

Corporation (NSDC) has also launched several initiatives to train teachers in digital skills and competencies. Overall, there is a growing recognition of the importance of digital competencies among vocational education teachers in India, and efforts are being made to address the challenges and promote the development of these skills.

Key digital competencies for vocational education teachers in the 21st century

In the 21st century, digital competencies are becoming increasingly important for vocational education teachers. Here are some of the key digital competencies that vocational education teachers should possess (Audrin, C., & Audrin, B. 2022):

Digital literacy: This includes knowledge of digital tools, software, and applications, as well as an understanding of how to use them effectively in the classroom.

Pedagogical knowledge: Teachers must have the knowledge and skills to integrate technology into their teaching practices in a meaningful way that supports student learning.

Communication: Teachers need to be able to communicate effectively with students, parents, and colleagues using digital tools, such as email, video conferencing, and instant messaging.

Critical thinking: Teachers should have the ability to evaluate digital resources, such as online articles and websites, for accuracy, bias, and relevance to the curriculum.

Adaptability: With technology constantly changing, teachers must be adaptable and willing to learn new digital tools and strategies as needed.

Data literacy: Teachers need to be able to collect, analyze, and use data from digital tools, such as learning management systems, to inform their teaching practices and improve student outcomes.

Cybersecurity: Teachers should understand the importance of cybersecurity and how to keep their students' data safe online.

Digital citizenship: Teachers must model responsible and ethical online behavior and help their students develop digital citizenship skills, such as online safety and responsible social media use.

Collaboration: Teachers should be able to collaborate with other teachers and professionals using digital tools, such as online platforms and social media, to share resources and ideas.

Creativity: Teachers should be able to use digital tools and technologies to design engaging and interactive learning experiences for their students.

Job specific digital skills: Job-specific digital skills refer to the particular set of digital competencies and abilities that are required for success in a specific job or profession. These skills vary widely depending on the specific field or job, but some examples of job-specific digital skills include programming and coding, graphic designing, digital marketing, data analysis, 3D modeling and printing etc. Teachers should be able to give jobs specific hands-on training and practical sessions to the students.

Strategies for empowering vocational education teachers with digital competencies

Empowering vocational education teachers with digital competencies is crucial for ensuring that they are able to effectively integrate technology into their teaching practices and prepare their students for the demands of the modern workforce. Here are some strategies that can be implemented to empower vocational education teachers with digital competencies (Cattaneo, A. A., Antonietti, C., & Rauseo, M. 2022):

Provide Professional Development Opportunities: Offer professional development opportunities that focus on digital competencies such as using technology tools, designing digital assessments, and creating digital instructional materials. These professional development opportunities can be delivered through workshops, online courses, webinars, or conferences.

Encourage Peer Learning: Encourage vocational education teachers to collaborate and share their experiences and best practices for integrating technology into their teaching practices. Peer learning can be facilitated through regular meetings, online discussion forums, or social media platforms.

Provide Access to Technology Tools: Provide vocational education teachers with access to technology tools such as laptops, tablets, and software applications. These tools should be up-to-date and easy to use to facilitate their integration into teaching practices.

Support Ongoing Learning: Provide ongoing support to vocational education teachers through coaching, mentoring, or online resources. This support can help them stay up-to-date with emerging trends and technologies and enhance their digital competencies.

Create a Technology-Enabled Learning Environment: Create a technology-enabled learning environment that promotes the integration of technology into teaching practices. This can be achieved by providing digital resources such as online textbooks, interactive whiteboards, and educational apps.

Align Digital Competencies with Curriculum: Align digital competencies with the vocational education curriculum to ensure that technology is integrated into the teaching and learning process. This alignment can help teachers understand how technology can be used to enhance student learning and success.

By implementing these strategies, vocational education teachers can be empowered with digital competencies to effectively integrate technology into their teaching practices and prepare students for the demands of the modern workforce.

Challenges and barriers in empowering vocational education teachers with digital competencies

Implementing digital competencies in vocational education is crucial to preparing students for the modern workforce. However, there are several challenges and barriers that can make this process difficult (Munir, M., Sinambela, E. A., Halizah, S. N., Khayru, R. K., & with the necessary digital skills for the modern workplace.

Australia's TAFE NSW (<https://www.tafensw.edu.au/>) - TAFE NSW is a vocational education institution in Australia that has implemented a range of digital competencies into its curriculum.

Mendrika, V. 2022). Here are some of the most common challenges and barriers:

Lack of funding: Implementing digital competencies in vocational education requires significant investment in technology, infrastructure, and training. Many vocational schools lack the funding necessary to make these investments.

Limited access to technology: Even if schools have the funding to invest in technology, some students may not have access to devices or reliable internet at home, which can create disparities in learning outcomes.

Resistance to change: Some educators may be resistant to change and may prefer traditional teaching methods. This can create a barrier to implementing digital competencies in vocational education.

Lack of training and support: Teachers and staff may require training and support to effectively integrate digital competencies into the curriculum. This training may not be readily available, or teachers may not have the time or resources to participate in it.

Difficulty in assessing digital competencies: Measuring the effectiveness of digital competencies in vocational education can be challenging. It can be difficult to assess whether students have acquired the necessary skills and knowledge, as well as to evaluate the impact of digital competencies on students' employability.

Rapidly changing technology: Technology is constantly evolving, which means that educators need to continuously update their skills and knowledge to keep up with new developments. This can be time-consuming and require ongoing investment in training and resources.

Lack of clear standards: There may be a lack of clear standards or guidelines for what digital competencies students should acquire in vocational education, which can create confusion and inconsistency in implementation.

Addressing these challenges and barriers will require investment, planning, training, and ongoing support to ensure that students have the digital competencies they need to succeed in the modern workforce.

Case studies of successful implementation of digital competencies in vocational education

There are several case studies of successful implementation of digital competencies in vocational education. Here are a few examples:

Finland's Digipeda (<https://www.digipeda.org/>) - In Finland, Digipeda is a digital teaching and learning platform that offers vocational teachers training courses in digital competencies. The program helps teachers to develop skills in online teaching, e-learning, and digital assessment. The Digipeda program has been successful in improving the digital competencies of Finnish vocational teachers.

Germany's Duale Hochschule Baden-Württemberg (<https://www.dhbw.de/english/home>) - The Duale Hochschule Baden-Württemberg (DHBW) is a vocational education institution that has integrated digital competencies into its curriculum. Students are taught using digital tools and platforms, and they are required to use digital tools for assignments and assessments. The program has been successful in producing graduates who are equipped

Students are taught using a range of digital tools and platforms, and they are encouraged to use digital tools for research, collaboration, and communication. The program has been successful in preparing graduates for the digital workplace.

Singapore's ITE (<https://www.ite.edu.sg/>) - Singapore's Institute of Technical Education (ITE) has implemented digital competencies into its curriculum to prepare students for the digital economy. Students are taught using a range of digital tools and platforms, and they are required to use digital tools for assignments and assessments. The program has been successful in producing graduates who are equipped with the necessary digital skills for the modern workplace.

In India, there are also several successful case studies of implementation of digital competencies in vocational education. Here are a few examples:

NSDC's Digital Skills Program (<https://nsdcindia.org/>) - The National Skill Development Corporation (NSDC) in India has launched a Digital Skills Program to train young people in digital technologies. The program offers training in areas such as digital marketing, web development, and e-commerce, among others. It has been successful in providing students with the necessary digital skills to succeed in the modern workplace.

TCS iON's Vocational Education Program (<https://www.tcsion.com/>) - TCS iON, a subsidiary of Tata Consultancy Services (TCS), has launched a vocational education program in India that focuses on digital competencies. The program offers courses in areas such as data analytics, cybersecurity, and digital marketing, among others. It has been successful in preparing students for the digital economy.

Skill India's Digital Literacy Program (<https://nsdcindia.org/digital-literacy-modules>) - Skill India, an initiative of the Indian government, has launched a Digital Literacy Program to train people in digital skills. The program offers courses in areas such as basic computer skills, online safety, and digital transactions, among others. It has been successful in improving the digital literacy of people in India.

NIIT's Digital Transformation Program (<https://www.niit.com/>) - NIIT, a leading IT training company in India, has launched a Digital Transformation Program to help companies and individuals develop digital competencies. The program offers training in areas such as data analytics, artificial intelligence, and cloud computing, among others. It has been successful in preparing people for the digital workplace.

CIET, NCERT has developed a digital platform called "DIKSHA" (Digital Infrastructure for Knowledge Sharing) (<https://diksha.gov.in/>) that offers vocational teachers and students access to a range of digital resources, including e-books, videos, and online courses. The platform has been designed to help teachers integrate technology into their teaching and to help students develop digital competencies.

These are just a few examples of successful implementation of digital competencies in vocational education. Other countries and institutions have also implemented similar programs with success.

Future directions and recommendations for empowering vocational education teachers with digital competencies

Vocational education teachers play a critical role in preparing students for the workforce by providing them with relevant and practical skills. With the rapid pace of technological

advancements, it is important for vocational education teachers to possess digital competencies to effectively engage and prepare their students for the digital workforce (Roll, M. J., & Ifenthaler, D. 2021). Here are some future directions and recommendations for empowering vocational education teachers with digital competencies:

Integrate digital competencies into teacher education programs: Teacher education programs should incorporate digital competencies as a core component of the curriculum to prepare future vocational education teachers with the necessary skills.

Provide professional development opportunities: Ongoing professional development opportunities should be provided to current vocational education teachers to enhance their digital competencies. These can include workshops, webinars, and training sessions.

Foster collaboration and sharing of best practices: Platforms for vocational education teachers to collaborate and share best practices in digital pedagogy should be established to encourage peer learning and support.

Provide access to technology and resources: Vocational education teachers require access to up-to-date technology and digital resources to develop their digital competencies. Institutions should invest in providing adequate infrastructure and tools to support effective digital teaching and learning.

Encourage experimentation and innovation: Vocational education teachers should be encouraged to experiment with different digital tools and platforms to enhance their teaching effectiveness and engage students in new and innovative ways.

Foster a culture of continuous learning: Institutions should create a culture of continuous learning, where vocational education teachers are encouraged to continuously develop their digital competencies and stay up-to-date with the latest technologies and trends.

By implementing these recommendations, institutions can empower vocational education teachers with the digital competencies needed to prepare students for the digital workforce and ensure that they are equipped with the skills and knowledge required to succeed in the 21st century economy.

The critical role of vocational competencies among vocational teachers

Competence generally refers to the ability, knowledge, skills, and qualities necessary to perform a task or achieve a goal effectively. It is the ability to perform tasks or activities with a high degree of proficiency, which comes from a combination of education, training, experience, and natural ability. Competence can be both technical and non-technical, and it can be developed and improved through continuous learning and practice. It is often measured through assessments and evaluations, and it is an essential aspect of personal and professional success in various fields.

Vocational competencies play a critical role among vocational teachers because they are essential for providing students with the knowledge and skills necessary to succeed in the workforce. Vocational teachers are responsible for equipping students with practical, job-specific skills that are necessary for successful employment in a particular field. Vocational competencies refer to the specific knowledge, skills, and abilities that are necessary for success in a particular vocational field. For vocational teachers, these competencies include not only technical skills but also pedagogical skills, such as the ability to design effective lesson plans and assessments, and the ability to create a positive and supportive learning

environment etc. Some of the essential competencies required for vocational teachers in school are as follows:

1. Technical Competence- Up-to-date knowledge and skills in the subject area, understanding of industry demands, future of work and technological disruption
2. Pedagogical Competence- Sufficient pedagogical knowledge
3. Technological Competence- Ample use of technology in teaching
4. Guidance and Counselling Competency and adequate skills
5. Sustainability Competence- Environmental and climate change, and circular economy
6. Cultural Competence- Inclusivity
7. Communication Competence- Adequate communication skills
8. Interpersonal Competence- Adequate interpersonal skills
9. Entrepreneurial Competence- Adequate entrepreneurial skills.

In conclusion, vocational competencies are critical for vocational teachers to possess as they not only directly impact their success but impact learning of their students. The importance of these competencies cannot be overstated as they play a vital role in preparing students for successful employment in their chosen field.

Conclusion

Digital competencies are crucial for empowering vocational education teachers to prepare students for the 21st century workforce. The rapidly changing technological landscape demands that vocational education teachers possess the necessary skills to integrate technology into their teaching practices. By equipping vocational education teachers effectively prepare students for the 21st century workforce. The rapidly changing technological landscape demands that vocational education teachers possess the necessary skills to integrate technology into their teaching practices. By equipping vocational education teachers with the relevant digital competencies, we can enhance the quality of vocational education, improve student learning outcomes, and meet the needs of the evolving job market. While there are challenges and barriers to implementing digital competencies in vocational education, there are also successful case studies that demonstrate the feasibility and benefits of such an approach. As we move forward, it is important to continue investing in the development of digital competencies among vocational education teachers and to create supportive environments that enable them to implement these competencies effectively. By doing so, we can ensure that our vocational education system is equipped to prepare students for the challenges and opportunities of the 21st century.

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