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REVIEW ARTICLE

Application of Technology for Skill Development and Recommending Career Paths: A Systematic Literature Review

Kai Ming Liang[1*], Saharia Binti Ismail[2]

[1]Faculty of Education, University Islam Melaka, Batu 28, Kuala Sg Baru 78200, Melaka, Malaysia.
Email: 17716228883@163.com
[2]Faculty of Education, University Islam Melaka, Batu 28, Kuala Sg Baru 78200, Melaka, Malaysia.
Email: saharia@unimel.edu.my

CORRESPONDING AUTHOR (*):
Kai Ming Liang
(17716228883@163.com)

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ABSTRACT

For students interested in competitive and sustainable employment in contemporary times, it is essential to make informed career choices, develop relevant skills, and assess the dynamics of the employment market. The rapid development of Artificial Intelligence (AI), Machine Learning (ML), Virtual Reality (VR), and educational technologies (EdTech) influenced the delivery of skill development and career counselling methods. However, inequities in accessibility to digital tools, a lack of data privacy, and institutional limitations posed challenges to internalizing the effectiveness of such technologies. This study aimed to explore how advanced technologies support both skill development in students and the selection of a career path, while identifying the hindrances and implications for academic institutions. (n=12) peer-reviewed articles, published between 2020-2025, were thematically analyzed while conducting this systematic review following the PRISMA guidelines. The major findings revealed that EdTech provided personalized recommendations for making career choices, enhanced students' self-efficacy, and offered flexibility and adaptability in learning. The results indicated a positive impact of immersive technologies on the development of both soft and hard skills, particularly through the simulation of real-time experiences. However, inadequate institutional resources, over-reliance on technology, and risks in data security act as relevant barriers. In conclusion, EdTech expands career planning options and skill enhancement. In the future, a mixed-methods approach can be used to gain detailed insights into the use of technology in pedagogy.

Contribution/Originality: This study contributes to the existing literature by providing in-depth insights on the impact of EdTech in skill development and career path selection.

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1. Introduction

In this evolving educational landscape and changing world, technology plays a potential role to shape learning skills and influencing proper career paths for students. Worldwide spending on educational technology (EdTech) is expected to increase drastically in 2025 and the expenditure on virtual and augmented reality is forecasted to escalate by 12.6 billion US dollars from 1.6 billion US dollars in 2018 (Statista, 2025). It makes a strategic shift towards a tech-driven system, and it is aligned with the broader agenda of career path recommendation and skill development through the use of different tools like data analytics, Artificial Intelligence (AI). In this new Global context, to survive and succeed, the development of sophisticated "skill bundles", including cognitive and non-cognitive skills, are crucial for an individual (World Bank Blogs, 2024). Personalized career planning and updated skills are getting more demanding to secure employment. The technologies enable advanced educational data mining by understanding the specifications and building relationships between career decisions and the learning performance of students. The popularity of virtual simulations, mobile applications, and online learning platforms is related to skill development. Renowned platforms, like LinkedIn, Udemy, and Coursera, serve short and flexible courses with virtual reality (VR), artificial intelligence (AI), and gamified learning for interactive training for students in upgrading their knowledge and skills. In modern career education, VR has the potential and serve as a powerful tool for getting realistic, immersive, and detailed job insights (Holly et al., 2024). The technology incorporates different career positions in diverse fields like creative, engineering, and healthcare to serve a variety of insights about career paths.

The paper aims to examine the application of educational technology in identifying career paths and skill development.

1.1. Research Questions

i. RQ 1: What are the main features and practices of educational technologies?
ii. RQ 2: What is the effectiveness of technology application in choosing career paths and developing skills?
iii. RQ 3: In what ways does technology support developing job skills for students and suggest career paths?
iv. RQ 4: What are the key problems in using educational technologies for students?

1.2. Significance of the study

The complex job market develops a competitive scenario that prioritizes the skill development and career guidance of students. In understanding the preferences and concerns of students, the career need assessment is essential to transform it into action (Khurumova & Pinto, 2023). The paper specifically focuses on the rapid use of technologies and platforms for upgrading skills for students and influencing career paths for secure employment. It is significant in knowing the effectiveness of AI-powered guidance, and virtual internships for employment and aligning the skills of students with employer criteria. AI systems offer student-analyzed perspectives to guide and adapt to the career and academic plans of students (Soomro et al., 2025). Adaptive learning solutions and AI enhance the needs of learners in specific areas that are hardly fathomed by human advisors due to resource and time constraints. The personalized and data-driven suggestion led students to achieve their career goals through skill development. Machine learning (ML) along with network visualization tools develops a career guidance

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system for mapping the compatibility between job profiles and skills of students. Problems of career decision-making are resolved by algorithms for effectively handling feature interactions and gathering non-linear relationships (Trujillo et al., 2025). Educational platforms and institutions are using technology for broadening the range of professions and enable users able to take ideas about multiple possibilities in careers to make confident decisions. However, the study may serve as key insights into practices, features, and the use of technologies for supporting career paths for students.

2. Literature Review

2.1. Features and practices of educational technologies

Educational technologies encompass multiple practices and features for learning and are beneficial for the students for employability. The recent landscape of learning and teaching is taking a drastic shift for swift development and utilization of information technology (AlGerafi et al., 2023). Collaboration, personalized learning, engaging content, and data-driven insights are the main features of the technologies that make wider access to employers and students. Virtual Reality (VR) and Augmented Reality (AR) technologies have the perspectives for revolutionizing educational scenarios and making an engaging and immersive experience for students (Al-Ansi et al., 2023).

The technologies are utilized to immerse students in diverse simulations, audio cues, and visuals. AI-based platforms, career assessment tools, VR career exploration, career counseling, and online mentorship are different areas where educational technologies are used. AI-enhanced learning analytics (LA) assist users in examining wide educational alternatives to suggest paths and assurance for decision-making (Gedrimiene et al., 2024). AI tools amplify mentoring through feedback, efficient communication, and personalized learning. VR and AR technologies serve as a more accessible experience of learning for students by identifying their special needs (Al-Ansi et al., 2023).

The tools suggest tailoring resources for skill development through analytics and simulations. AI and lifelong learning make a contribution to developing employability and improving career mobility to empower individuals to effectively negotiate the changing work scenario (Pandya & Wang, 2024). These technologies are widely applied for skill development and expanding the knowledge of students based on their capability and preferences. Educational and modern learning platforms are using these tools to design rich multimedia content, universal accessibility with these interactive tools, and develop flexible options with comprehensive feedback systems. It effectively analyses student skills by developing different assignments, quizzes, and tests for gaining ideas of the learning progress for reaching particular career goals. The technological features of accessibility, personalization, ease of use, and scalability with data-driven processes attract students for their importance in modern career choices.

2.2. Effectiveness of educational technologies in choosing career paths and developing skill

The application of technologies in various platforms redefines the landscape of career development choices with employment experiences. Emerging technology serves wider possibilities for career development by promoting networking and collaboration, getting access to resources, developing research capabilities, stimulating dissemination and publication, accessing resources, representing skills, and creating possibilities for

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professional growth (Onyema et al., 2024). In the career stage of university students, AI use for trajectories and career choices assists in enhancing reflective competencies by addressing the determined elements in different career paths (Bankins et al., 2024). AI serves key insights by matching and assessing the skill set of an individual with prerequisite skills to be eligible in tertiary specializations, careers, and jobs while developing the knowledge of the students and making informed decisions about their career and educational choices. Considering occupational requirements and the skill of a student, AI is used in recommending pathways by understanding potential careers, and demands of employers with aligning skills. ML models design tailored recommendations by incorporating contextual information, career preferences, and academic records to support the informed choice of students (Manganello et al., 2025). Increasing use of platforms and technology advancement make career guidance tech-driven and easily accessible. These tools display various features and opportunities for students for selecting their careers and match their skills. The use of various technologies creates a virtual environment with developing self-paced support by adjusting individual preferences and schedules. In rendering education more personalized, engaged, flexible, and accessible, digital platforms for learning promote the success of students (Zou et al., 2025). As technology and platforms are continuously evolving, diverse learners are supported with developing their outcomes in the broader landscape. The platforms assess the condition of students and guide proper careers by considering the circumstances and recent employability concerns.

The use of technology introduces different learning approaches, like serious gaming, simulations, and experimental learning for making practice in the work environment as a key technique of skill development. In increasing professional skills and gaining experience, the virtual environment reshapes the features of the working atmosphere by reducing the problems of high-risk, expensive real work. In assisting young adults or students, VR career guidance tools are effective in building balanced and informed career decisions (Holly et al., 2024). A study found CareProfSys as a functional, necessary, and useful tool for future professional choices of students and for guiding their careers, especially in the technical field (Dascalu et al., 2024). VR scenarios create a desire to know about the recommended professions and build an immersive experience. In the training of the fields, especially trade, international economics, and e-commerce, VR technology serves unique advantages in designing a trade scenario and business environment for emerging students in practical operations like trade transaction process, simulating operations of e-commerce platforms (Long et al., 2025). It develops the enthusiasm and interest of students in learning and makes professional skill development through practice. This immersive expertise through VR technology develops interaction and active participation of students to discover knowledge through freely exploring in a virtual environment.

AI-driven technologies serve wider advantages to the students by developing a learning platform to attend activities, managing instructions, and designing a flexible curriculum. Learning analytics and AI are integrated into the course and skills advising for representing a transformative scope for student success in higher education institutions (Lai et al., 2025). The platforms build connections between corporate hubs, physical campuses, and online users by making interactive and dynamic communication between students. A study found the application of scalable AR and VR to meet the changing educational needs, dynamic curriculum changes, and student population expansion (AlGerafi et al., 2023). This technology can make the student understand the constant changes in the employment market to develop their skills and knowledge accordingly. In

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gamified learning, VR technology is perfect as it develops interactive and immersive experiences by replacing situations from real life and serves quick feedback to students (Marougkas et al., 2023). It develops a progression and accomplishment sense for influencing learners to reach their career goals with an enjoyable and captivating learning experience. The educational industry uses blockchain technology (BT) to manage authenticity and data security. It builds a safe platform for transparency, developing the trust of students to share their personal data for career guidance. Blockchain technology keeps the minute documentation of the course in data blocks by timestamps in a sequential manner (Bhaskar et al., 2021). It develops a virtual infrastructure for managing credentials, document storage, and student records. The educational platforms use BT for the identification and verification of students, better control, interactivity, data management, and support career decisions of students. The transparency and visibility of the method and record of the educational program develop the trust of students. However, educational platforms are using all of these technologies to engage their learners and suggest career paths by analyzing circumstances and their situations.

2.3. Problems of students in accessing platforms and technologies

The students have faced multiple problems over the decades for their skill development and using technologies for getting career options. As cyber security concerns are constantly increasing, sometimes students face a dilemma to trust online educational platforms. Trust and credibility issues are emerging problems for students to engage in these online platforms. The educational industry uses online platforms and emerging technologies and these are associated with various threats and risks. ML and AI gather digital information from users for assessing training needs, skills, and talent and it directly hampers privacy due to incorrect use (Tusquellas et al., 2024).

Blockchain technology used in the platforms evokes different barriers and that makes students distracted about their career planning. Regular updates and the introduction of new features create a thread of data leakage that raises a security concern (Bhaskar et al., 2021). It affects the trust of students for the threatening barrier of data leakage and malicious attacks. Besides, students in remote areas face the problems of poor internet connectivity, and lack of access to educational platforms to choose a career at an early stage. Staff shortages, budget cuts, and outdated resources also limited the potentiality of career services for delivering comprehensive student support (Osunde, 2025). These make it difficult for ensuring the proper career growth of diverse students in this competitive environment. Sometimes, the educational platforms also face difficulties in managing the diverse demands of students with their different interests, backgrounds, and career choices. Lack of professionals, misuse of information, and improper algorithms are the main reasons that hamper students in their career choices and employment programs. It misguides students and makes lengthy planning and unnecessary courses to reach their careers by aligning their interests and preferences.

2.4. Theoretical Framework

The Technology Acceptance Model is relevant in this context and explains the technological use and acceptance by the users. According to Mustafa and Garcia (2021), "Perceived Usefulness, Perceived Ease of Use, Attitude, Satisfaction, Course Information, Academic Performance, and System Quality" are the constructs, representing the main drivers that affect the usage intention of online learning. In pedagogical application and implementing technologies for skill development and identifying career paths, the model

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is common. The model is designed by the institutions by considering the intention and acceptance of technological use by the students. In this current context, educational platforms are rapidly using technology by taking the feedback and attitude of learners to access it. "Constructivist Learning" is an educational approach that highlights the active environment of students for a clear understanding of the subject by constructing knowledge through interactions and hands-on experiments with the environment (Marougkas et al., 2023). It is strongly aligned with the context as modern platforms are using VR-based practices for designing a virtual environment for experimenting and exploring new concepts in an engaging and immersive way.

Connectionism theory builds significance in demonstrating the connection between ideas and concepts to create a "comprehensive network of knowledge" for the learners (Marougkas et al., 2023). The ideology is aligned with the use of AR and VR that make the learners relate real-world scenarios and objectives with these virtual components for transparency in understanding. Human Capital theory explains that employed students during their work develop their potential by achieving new information and skills (Pedroso et al., 2022). Work experience creates different opportunities for students to learn new words for better employability and career growth. The theory serves an important note about developing employability and the economic value of individuals through investing in training, skills, and education. The investment in the areas develops competencies to make the students attractive to employers for their employment. These theories are closely linked with career advancement and technological use in education for the skill development of students.

2.5. Research Gap

The use of technology in educational perspectives, especially in career choice and skill development for employment is an under-researched subject. The previous research was mainly focused on technological use in the classroom, teaching, and learning. Most of the studies highlighted Edtech especially in entrepreneurship, ignoring the use of various tools for suggesting diverse career options for students. There is a gap in avoiding the significance of digital tools, like AR, VR, and AI that are used in modern platforms for suggesting career paths and preparing students to reach their goals by upgrading skills and matching criteria. The studies hardly examine the role of technology in influencing career paths. This paper focuses on technology aspects and its features in influencing and guiding careers for students with paving skill development opportunities.

3. Methodology

3.1. Research Design

The paper is entirely based on qualitative study as it is considered a more suitable way for in-depth analysis of the topic with proper elaboration, verification, and interpretation. It considers systematic description and analysis for the research subject about technological application for finding career paths and skill development of students. A qualitative approach takes key information through establishing proper meaning for actions in different phenomena by gathering individual experiences with building the scope of in-depth and in-detail information (Taherdoost, 2022). In examining the practices of using various technologies, like AI, ML, AR, and VR in recommending career paths, a systematic literature review (SLR) is considered. The approach is focused on examining the effectiveness of technologies and their wide application for the career

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choice of students. The findings from SLR assist in designing tangible directions of research and support readers in following the interpretation of authors (Sauer & Seuring, 2023). It is a significant technique to answer the questions of research by taking numerous ideas about the subject. This is followed by a thematic descriptive analysis to create a link between the effectiveness of technology and career path and skill development. The analysis with SLR explores the use of modern technologies by the educational sector for career path recommendations and following skill development of students. Thematic analysis with the purpose of the study designs research-ready administrative information documented, curated, accessible, and broad (Mc Grath-Lone et al. 2022). The ideas regarding technology application are presented and make the study scientific with validating information. The design is essential for synthesizing evidence for better transparency presenting unbiased ideas about career development and choosing career paths through technology use. SLR minimizes subjectivity and understands research objectivity by excluding irrelevant ideas about the topic. Using this thematic analysis and SLR, the literate makes an understanding of the need for skill development and career paths for students with the broader application of technologies. The techniques establish insights with adequate knowledge of the subject.

3.2. Data Collection and Analysis

In conducting SLR properly, secondary data has been taken in the study by gathering information from different journals. It uses online databases for the accessibility for taking ideas with applying associated phrases, and keywords about application of technology in skill development and career path selection. In collecting literature and screening information, PRISMA is considered by using common databases like Wiley Online Library, ScienceDirect (Elsevier), and SAGE Journals. The literature is updated and taken up to May 2025. The application of common keywords to search is the core strategy of data collection. It uses, "technological application", "educational technology", "career path recommendation", and "skill development for employment". The use of these keywords in these databases creates numerous ideas and journals to document the areas with proper screening. The study has properly maintained authenticity and takes quality information by choosing peer-reviewed English language journals. It collects 4215 literature and then identifies the duplicates it reached 3765. Exclusion and inclusion criteria are maintained to make the area focused on the specific topic and develop core insights about EdTech application in career path selection and skill development. The selected literature was properly reviewed by reading the areas and excluding the articles on the technologies applied in the job market or curriculum design. It is only concentrated on career path selection and perspectives of professional skill development. It gathered full-text literature only for academic authenticity. Considering different criteria, only 12 journals are collected and it is represented in Figure 1.

The data analysis is focused on illustrating the concept and categorizing the area to make a transparent understanding of the subject while answering research questions. Thematic analysis is considered an accessible qualitative approach that provides insights into behaviors, views and shared experiences of participants to the researchers (Jowsey et al., 2021). It builds a shared understanding and the collection of data from different authors develops insights about EdTech applications in selecting career paths and associated skill development. Moreover, after screening this analysis encounters the information from journals for answering research questions.

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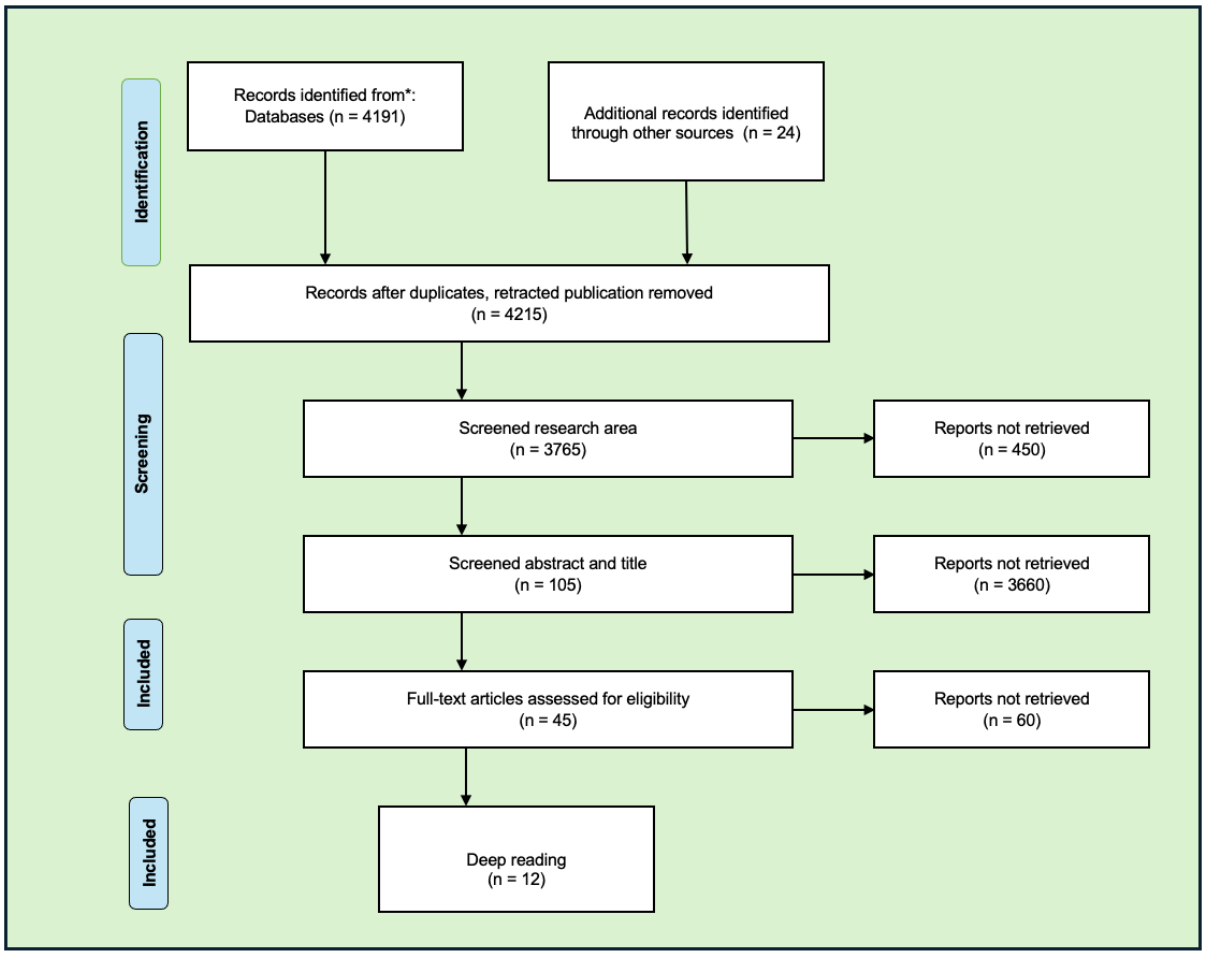
Figure 1: PRISMA flow diagram



4. Results

The SLR is focused on establishing knowledge about the technology application for developing skills and identifying career paths. The results draw twelve articles to review the information and understand the use of various technologies and their effectiveness for career development. Table 1 represents four sections: 'author; sample; methodology; technology use, skill development, and career path selection' and for proper understanding of the literature.

Table 1: Summary of the selected literature

Author	Sample	Methodology	Technology use, skill development, and career path selection
Long et al. (2025)	200 students from technical and vocational college	Questionnaire surveys, in-depth interviews, and test score evaluations for descriptive statistics and analysis of variance.	VR technology builds interest and develops satisfaction in learning with mastering practical skills, and proficiency in theoretical knowledge.

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Tusquellas et al. (2024)	Qualitative research and selection of 20 articles from 1113 registers.	"Systematic Literature Review" based on PRISMA.	AI is widely used for identifying needs, skill development, individual training, enhancing personalized training paths, and recruitment processes for predicting attrition and talent retaining.
van Hooft et al. (2020)	378 independent samples	Meta-Analyses	In counseling and profiling inventories, job search attitude, self-efficacy, employee commitment, and self-regulation are important factors.
Kruja et al. (2024)	Representatives of 64 companies	Exploratory factor analysis and Descriptive Analysis	The promotion of skills and values of the graduates assists in a successful transition into the job market and promotes long-term social advantages.
Liu et al. (2023)	273 undergraduate students in China	Primary data with survey, and quantitative analysis.	Career education initiatives are prioritized by the universities with establishing career goals among the students by cultivating a flexible and positive career outlook by adopting various changes throughout their career journeys.
Kang (2023)	93 university students in the Republic of Korea	Quantitative analysis (Questionnaire and survey)	Innovative educational strategies are the main component for encountering societal expectations, like meeting the diverse and unique needs of Generation Z and integrating technology and business.
Kara & Özkinaci (2023)	40 participants, 25 female and 15 male.	Qualitative research methods and content analysis	The students benefitted by using technology effectively in developing their professional career and it is associated with various challenges like addiction.
Azhenov et al. (2023)	104 university students in different subjects.	Quantitative Analysis	Career development courses use different tools and make possible solutions for the employment opportunities of students by obtaining information and knowing their potential and strengths.

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Soares et al. (2022)	26 research articles	Qualitative method and Systematic Literature Review (SLR)	In educational programs and career interventions, it is required to serve updated information about the dynamic global work environment to build career readiness and decision-making.
Lee et al. (2022)	341 college students	Quantitative Analysis	The development of effective career guidance systems in college develops strategies to enhance the self-efficacy and career decision-making of students by establishing identity and self-concept.
Chugh et al. (2023)	46 empirical research studies	Qualitative Analysis	In EdTech implementation and decision-making in higher education, success metrics, academic discipline, stakeholder perception, technology, and theoretical foundations are the main dimensions.
Wong (2024)	285 university students	Quantitative Methods and Systematic Literature Review	The influence of technology creates a change in the job market while the deployment of human-centric skills is necessary for the students.

4.1. Finding Career Path and Skill Development for Successful Employment

In this current century, there is a growing importance in choosing career paths and skill development for students. There are different ways of finding careers based on multiple factors, like, individual preferences, capabilities, existing skills, academic knowledge, professional competence, market situations, and employability options. The increasing use of technology and the growth of e-learning create scopes and digital platforms to assist students in finding their career paths easily.

According to van Hooft et al. (2021), the job search is becoming a growing and critical importance to society organizations and individuals. Job-search attitude, job-search self-efficiency, and employee commitment are different antecedents for job-search interventions. The students are highly encouraged and aware of job search to get the right employment opportunity and career options. Self-efficacy in career decision-making is enhanced by the institutions by strengthening the belief and abilities of students while promoting career educational skills and making the students sustain with developed mindset, skills, and knowledge of career decisions to lead career paths in the future (Liu et al., 2023).

Educational institutions, especially universities, are focused on career education initiatives to develop a transparent goal for students. Another study found that, as the career paths of students are continuously evolving, the development of specific and practical career guidance programs and counseling is pivotal for decision-making,

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uplifting self-efficacy with delivering practical systemic suggestions and diverse opportunities (Lee et al., 2022). It allows the students to have professional knowledge while developing a flexible and positive mindset and outlook to negotiate diverse changes during their career journey. It is gradually important to reduce different challenges and ensure reaching their career path by following the journey with the necessary steps. The students are exploring various ways and use technologies to explore job options by matching their interests, knowledge, and skills.

The educational industry is focused on developing innovative strategies to meet different expectations and unique needs of students for the rise of new career paths like leveraging technology and young startups. In this current employment market, there are various opportunities for different industries and educational platforms to use technologies to combine various professional roles and design journeys for students. At the time of emerging hyperscale AI, like Bard and ChatGPT, both students and universities are focused on cultivating cutting-edge and adaptable learning skills (Kang, 2023).

In existing in the industry and competitive market, the development of skills has become the utmost priority with focusing on a proper career. There is a recognition and gradual demand for skill development of students for employers. The educational institutions introduce learning plans, and career course design for encouraging students on new job roles and explaining responsibilities. Integration of skills and values is necessary for the graduate to have professional knowledge of the job roles while positively and ethically contributing to society (Kruja et al., 2024). The graduates are properly trained with different courses to develop professional ideas and knowledge to attract employers and compete in the broader environment. According to Asefer and Abidin (2021), in getting employment, hard skills support and soft skills assist in employment retention. In this AI-driven market, to sustain, improving human-centric skills like career flexibility and critical thinking has become vital (Wong, 2024). It makes the students aware of combining both soft and hard skills for quick advancement in their profession and to become successful in their careers. Lack of required skill sets can lead to performance reduction and affect competitiveness in institutions (Asefer & Abidin, 2021). The devastating impact of unemployment for lack of skills creates an urgency in developing skills with aligning the career paths for the students. Skill development and choice of career path are beneficial for professional life, and creating high earning potential.

4.2. EdTech use and its practices in career counseling

In this current market, EdTech changes the broader scenario of education and employment by guiding properly. It is beneficial for learners for collaborative and activity-based experiences with project-based and problem-solving learning (Tusquellas et al., 2024). The versatility and innovative features of the platforms allow the students to access hands-on guidance and mentorship from professionals and industry experts. It develops richness, interactivity, and accessibility of learning and skill development of diverse and broader learner groups. The immersion and interactivity of VR technology are highly praised by students as its features improve experiences and learning outcomes (Long et al., 2025).

The technology simulates a high-risk operation scenario in a virtual environment for the safe practice of students while ignoring accidents and potential dangers in the actual environment and operations. It can build the knowledge and ideas of students by designing a large space for them to explore and connect with the employment landscape.

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In the educational setting, the proliferation of AI widens the path of automated tutoring systems with personalizing instruction on grades and making out-of-class support (Zou et al., 2025). The technology is widely used for its advantages to measure the capabilities of students and identify their strengths through performance-based analysis. In career counseling, the educational industry is adopting the technologies and guiding students rightly with proper skill development, monitoring, and evaluation. AI algorithms can evaluate and adapt content to meet various learning styles and make more accessible materials to diverse students (Ayeni et al., 2024). AI-powered career guidance platforms use algorithms to identify the personality traits, aptitudes, and interests of students for customized suggestions. The technologies bridge the gap between employment realities and student potential by evaluating vast information from educational pathways, job markets, and career trajectories. The educational institutions collect student ideas and make counseling to identify their choices for proper career path recommendations. These tech-driven recommendations are reliable and effective for long-term growth and enhance job satisfaction while building professionalism.

Modern learning platforms use diverse technologies to serve unique and advanced learning experiences by catering to the individual needs of students. It is observed that LinkedIn Learning and Udemy platforms suggest courses, considering skill levels, past course completions, and user preferences to ensure the students attend learning paths properly by adjusting their interests and objectives (Zou et al., 2025). This makes a tailored and meaningful experience by featuring progress tracking and personalized feedback for receiving targeted support through guiding their journey. The platforms are continuously adopting technology to support students from various perspectives and are updated about the job market and employability options. In career counseling, gamified learning and interactive assessment are the key practices with simulation-based scenarios, interest inventories, and psychometric tests.

The industry is utilizing VR, AR, and AI for designing a virtual environment for students to learn and explore the employment world. EdTech is widely expanding for developing effective solutions on career paths by accessing technologies and catering to diverse requirements, priorities, and needs of students. Supporting students in promoting their life-long skills is important for their use in career changes and seeking jobs (Azhenov et al., 2023). Another study found that in university students, raising awareness of a flexible and regular self-regulated career path is the main purpose for career intervention in the future (Soares et al., 2022). This flexibility can assist them in negotiating adversity and accomplishing their career goal through practice. This technology and effectiveness assist the industry in helping students in planning their careers by considering different aspects. Data-driven analysis and suggestions for careers are effective in guiding students and tracking their journey to reach career goals.

4.3. Barriers of EdTech for career paths

In this competitive market, EdTech is widely used and it raises different barriers with hampering career paths. Recently, the educational industry has designed tech-driven career guidance and planning while it is associated with various challenges. Regarding the use of technology for students for their professional careers, digital technologies have both negative and positive features (Kara & Özkinaci, 2023). Lack of psychological social and institutional dimensions also limits the access of students to career guidance. Limits of equitable use, issues in readiness, and digital access are various common problems.

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Over-reliance on technologies and their problematic use can lead to digital addictions for students (Kara & Özkinaci, 2023).

Besides, the use of ML and AI introduces concerns about data privacy that severely hampers the privacy of employees and students. These privacy issues and data breach threats affect students to rely on the suggested career paths disrupting institutional reputation. Besides, the educational industry or higher institutions, like universities and colleges face different burdens and obstacles to using EdTech to support students in their career planning and identifying paths. A study observed that Edtech execution is a multifaceted and complex decision-making process that needs insights from multiple perspectives (Chugh et al., 2023).

The lack of EdTech resources in the institutions is another problem in supporting students to get proper career counseling and opportunities to find their paths and skill development. In the education project of the World Bank, it is found that a limited comprehensive strategy for identifying cyber security and privacy issues is a major concern (Salimi, 2025). The educational industry is unable to develop proper strategies for addressing security issues to develop trust among students in guiding their careers. Sometimes, resource-constraint limit the institutions for training and providing structured programs for students. Reluctance to embrace advanced technology is another problem of traditional universities and colleges. Lack of concern regarding student well-being, data privacy, insufficient budget, and limited professional development are considered different barriers to using EdTech in suggesting career paths.

5. Conclusion

The study has broadly discussed the use of technology in advance in the career paths with proper skill development of students. A limitation is observed for only considering secondary information from peer-reviewed journals. The lack of primary information or qualitative analysis through taking interviews and surveys is another gap in this paper. In this area, future research should consider a mixed data collection for taking vast ideas of technology used for the educational sector in supporting employment opportunities of students from different aspects, including career planning, selecting paths, course suggestions, and skill development. However, future research can focus on different language journals to cover more subjects and technological applications in changing the employment scenario and making students successful in their professional lives.

In the educational and employment market, technological applications are gradually expanding and they connect students and employers by influencing career paths, and upgrading skills. The paper has discussed the use of AI, ML, AR, BT, and VR for developing educational platforms to influence students to find their career paths by aligning their choices. The institutions are continuously advancing their systems and using technology for a smooth system and transition of skills for a secure career. In reaching career goals, skill development is a vital concern through different training, experiences, and courses and Edtech acts as a catalyst in accessing the capability, and knowledge of students by tracking their journey through suitable planning. The literature is connected with relevant theory to make a connection with technology acceptance and the importance of working students to uplift their careers. The educational platform creates a virtual scenario to allow the students to explore and learn about their employment easily. The paper also identified the problems of students in accessing technologies due to the barriers of data leakage, poor connectivity, misguidance, poor planning, and so forth.

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Considering secondary data and identifying the validity journals, core information about technological applications is taken to develop thematic qualitative analysis. It makes the point clear that skill development and finding career paths pave the way to successful employment. Edtech is rapidly used in career planning for students by accessing their situations and creating algorithms for career selection from a wide variety of professional options. The discussion provides wide insights about EdTech and its effectiveness for students to find their careers and develop skills. The thematic analysis makes ideas on the subject for knowing the recent importance of career path selection and skill development while examining the challenges of EdTech.

The study has significant implications for the educational sectors for considering multiple scenarios in influencing career paths for students. The study has revealed the emergence of skill development and finding a career path by highlighting technological use for data-driven decision-making and guidance. It gives a broader idea to the educational sectors for using different technologies and informs students about the recent employment market by providing updated information to enhance their decision-making and self-efficacy. Modern career guidance platforms and the education sector should be aware of the EdTech difficulties and problems the students are facing in taking guidance.

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Conflict of Interest

The authors reported no conflicts of interest for this work and declare that there is no potential conflict of interest with respect to the research, authorship, or publication of this article.

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