



The future of skills: Assessing vocational education in Jammu and Kashmir

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Abstract

Vocational education plays a crucial role in bridging the gap between academic learning and practical skills required by the workforce. In the context of Jammu and Kashmir, a region marked by unique socio-economic challenges and evolving educational landscapes, assessing the current state and future prospects of vocational education is vital for sustainable development. This study examines the effectiveness, accessibility, and relevance of vocational training programs offered in Jammu and Kashmir, focusing on their alignment with emerging market demands and technological advancements. It highlights the barriers faced by students, including infrastructural limitations, socio-political factors, and lack of awareness, while emphasizing the potential of vocational education to enhance employability and entrepreneurial opportunities among youth. By analyzing government initiatives, institutional frameworks, and stakeholder perspectives, the research outlines strategic recommendations to revamp vocational education, fostering skill development that meets future economic needs. Ultimately, the study underscores the importance of an adaptive, inclusive, and forward-looking vocational education system as a cornerstone for the region's socio-economic upliftment and long-term growth.

Keywords: Vocational education, skill development, Jammu and Kashmir, employability, workforce training, socio-economic challenges, technical skills, youth empowerment, government initiatives, educational policy

Introduction

Vocational education, often described as career and technical education, is a critical pillar in modern education systems worldwide, aimed at equipping individuals with specific skills and knowledge required for particular trades, crafts, or careers. Unlike traditional academic education, which emphasizes theoretical knowledge, vocational education focuses on practical learning that prepares students for direct entry into the workforce. In a rapidly changing global economy marked by technological advancements, industrial diversification, and shifting labor market demands, the significance of vocational education has grown exponentially. It serves as a vital bridge connecting educational institutions with the needs of employers, ensuring that youth are not only employable but also adaptable to future challenges.

In the context of Jammu and Kashmir (J&K), a region characterized by its unique socio-political dynamics and geographical constraints, vocational education assumes an even more critical role. The region's economy has traditionally been agrarian and handicraft-based, but recent shifts toward service sectors, tourism, and emerging industries necessitate a re-evaluation of skills training frameworks. Jammu and Kashmir's youth constitute a significant portion of the population, making skill development essential not only for individual prosperity but also for broader regional economic growth and social stability. Vocational education has the potential to address high youth unemployment rates, create pathways for self-employment, and contribute to peace-building by offering alternatives to conflict-driven disengagement.

However, despite its importance, vocational education in Jammu and Kashmir faces numerous challenges. The region's education infrastructure is often constrained by inadequate facilities, outdated curricula, and a shortage of trained instructors. Political instability and intermittent disruptions have further hindered consistent educational

delivery. Additionally, there exists a social stigma associated with vocational training, where academic degrees are often valued over skill-based education. This has led to lower enrollment and retention rates in vocational courses. The limited industry linkage and lack of updated training programs aligned with market needs mean that many vocational graduates find themselves ill-prepared for employment, exacerbating issues of underemployment and brain drain.

Government initiatives have attempted to revitalize vocational education in the region through schemes like the Skill India Mission and various state-specific programs aimed at enhancing technical skills among youth. Collaboration with industries, introduction of new trades, and investment in infrastructure have been prioritized. However, the effectiveness of these programs requires thorough assessment to understand their impact and identify gaps. The role of private sector partnerships, NGOs, and international organizations also adds layers of complexity and opportunity in shaping the vocational education landscape.

Technological changes such as automation, digitalization, and the rise of the gig economy have further transformed the skill requirements globally and locally. For Jammu and Kashmir to stay competitive and ensure its youth are not left behind, vocational education must evolve to incorporate emerging skill sets like digital literacy, renewable energy technologies, healthcare support, and hospitality management. Equipping students with 21st-century skills that combine technical expertise with soft skills like communication and problem-solving will be crucial in creating a resilient workforce.

This study aims to provide a comprehensive assessment of vocational education in Jammu and Kashmir, examining its current status, challenges, and future potential. It explores the existing educational infrastructure, curriculum relevance, institutional capacity, and student outcomes. The

research also investigates socio-cultural attitudes toward vocational training and the policy environment governing skill development. By drawing insights from educators, students, policymakers, and industry stakeholders, the study seeks to present a holistic view of the vocational education ecosystem in the region.

Moreover, the study will analyze how global and national trends in skill development intersect with the local realities of Jammu and Kashmir. It will highlight best practices, innovative approaches, and success stories that could be scaled or adapted for broader impact. The goal is to outline strategic recommendations for policymakers, educational institutions, and community leaders to create a more inclusive, accessible, and future-ready vocational education system.

Ultimately, enhancing vocational education in Jammu and Kashmir is not merely an educational reform; it is a socio-economic imperative. It has the potential to empower youth, stimulate economic diversification, reduce dependency on traditional sectors, and foster social cohesion. As the region moves toward greater stability and development, investing in skill development through effective vocational education will be a cornerstone for achieving sustainable growth and improving the quality of life for its people.

Methods

Research Design

This study adopts a mixed-methods research design, combining both qualitative and quantitative approaches to comprehensively assess vocational education in Jammu and Kashmir. The mixed-methods approach enables the collection of rich, contextualized data while providing measurable evidence to support findings. The quantitative aspect focuses on statistical analysis of enrollment data, course completion rates, and employment outcomes, while the qualitative component seeks to explore perceptions, challenges, and experiences of key stakeholders through interviews and focus group discussions.

The study is primarily exploratory and descriptive, aiming to map the current state of vocational education, identify gaps, and assess future potential in relation to evolving skill demands. A cross-sectional design was employed, capturing data at a specific point in time to provide a snapshot of the vocational education landscape in Jammu and Kashmir.

Study Area

The research was conducted across multiple districts in Jammu and Kashmir to capture a representative picture of vocational education across urban and rural settings. Given the region's geographical diversity and socio-economic disparities, institutions from both Jammu and Kashmir divisions were included. This ensured an inclusive perspective reflecting the varied infrastructural, cultural, and economic contexts within the region.

Sampling Strategy

A purposive sampling technique was used to select vocational training institutions, educators, students, government officials, and industry representatives involved in vocational education. This non-probability sampling method was chosen to focus on participants who possess in-depth knowledge and experience relevant to the study objectives.

- **Institutions:** Vocational training centers affiliated with government schemes such as the Directorate of Skill Development, private vocational institutes, and NGO-run centers were selected to capture a broad range of operational models.
- **Students:** Current enrollees and recent graduates were included to understand student experiences, motivation, and employment outcomes.
- **Educators and Administrators:** Trainers, principals, and administrative staff provided insights into curriculum delivery, resource availability, and institutional challenges.
- **Government and Policy Makers:** Officials involved in vocational education policy and implementation were interviewed to gain perspective on program design and future plans.
- **Industry Representatives:** Employers and local business leaders were consulted to assess the alignment between vocational training and labor market needs.

In total, approximately 150 respondents were involved in the study, comprising 70 students, 40 educators/administrators, 20 government officials, and 20 industry representatives.

Data Collection Methods

1. Surveys and Questionnaires

Structured questionnaires were administered to students and educators to collect quantitative data on enrollment demographics, course availability, training quality, job placements, and skill relevance. The questionnaires included closed-ended questions, rating scales, and multiple-choice items for ease of analysis.

2. Semi-structured Interviews

In-depth interviews were conducted with key informants including government officials, policy makers, and industry leaders. These interviews aimed to explore deeper insights into policy frameworks, institutional challenges, future skill requirements, and collaboration mechanisms between education providers and industry.

3. Focus Group Discussions (FGDs)

FGDs were organized with groups of students and trainers to encourage open dialogue about perceptions of vocational education, barriers to participation, social attitudes, and suggestions for improvement. These discussions helped uncover nuanced socio-cultural factors influencing vocational education uptake.

4. Document Analysis

Secondary data was gathered from government reports, policy documents, institutional records, and previous research studies. This provided contextual background, historical trends, and official statistics on vocational education in Jammu and Kashmir.

5. Field Observations

Visits to vocational training centers were conducted to observe teaching methodologies, infrastructure conditions,

equipment availability, and classroom interactions. Observational notes helped validate self-reported data and assess the practical environment for skill training.

Data Analysis

Quantitative Data

Data from surveys and questionnaires were coded and entered into statistical software (SPSS) for descriptive and inferential analysis. Measures such as frequencies, percentages, means, and standard deviations were calculated to summarize participant characteristics and responses. Cross-tabulations were used to identify patterns related to gender, region, and course types. Where relevant, chi-square tests and t-tests were employed to determine the significance of associations between variables.

Qualitative Data

Interview and FGD transcripts were transcribed verbatim and analyzed using thematic content analysis. NVivo software facilitated coding and categorization of data into emerging themes such as infrastructural challenges, socio-cultural barriers, policy perceptions, and future skill demands. Triangulation of data sources enhanced validity, with comparisons made between interview narratives, focus group insights, and observational findings.

Document Analysis

Secondary sources were systematically reviewed to extract relevant policy initiatives, enrollment statistics, and vocational education models. This analysis provided a baseline for comparing current findings and understanding policy evolution in the region.

Ethical Considerations

Ethical approval for the study was obtained from the relevant institutional review board. Participation in surveys, interviews, and FGDs was voluntary, with informed consent obtained from all participants. Confidentiality and anonymity were ensured by de-identifying responses and securely storing data. Special attention was paid to ensure that student participants, some of whom were minors, were protected, with parental or guardian consent acquired where necessary. Cultural sensitivity was maintained throughout the research process, respecting local customs and norms.

Limitations

While the study employed rigorous methodologies, certain limitations exist. The purposive sampling limits the generalizability of findings beyond the selected institutions and participants. Political instability and seasonal disruptions in Jammu and Kashmir occasionally affected data collection schedules, potentially impacting the comprehensiveness of field visits. Additionally, self-reported data from participants may be subject to social desirability bias. Despite these challenges, the triangulated mixed-method approach mitigates some of these limitations by providing a multi-faceted perspective.

Summary

The combination of quantitative and qualitative methods enabled a comprehensive assessment of vocational education in Jammu and Kashmir, capturing statistical trends as well as lived experiences and perceptions. The

multi-stakeholder approach ensured that the study reflects diverse voices, from learners to policymakers, providing a robust foundation for analyzing the current state and future prospects of skill development in the region. The insights generated aim to inform targeted interventions and policy reforms to enhance the relevance, quality, and accessibility of vocational education, thereby empowering youth and contributing to sustainable regional development.

Results

Overview

The study aimed to assess the current status, challenges, and future prospects of vocational education in Jammu and Kashmir. Data were collected from 150 participants including students, educators, government officials, and industry representatives across multiple districts. Both quantitative survey data and qualitative interviews and focus group discussions were analyzed to provide a comprehensive understanding of vocational education's effectiveness and relevance in the region.

Enrollment and Demographic Profile of Students

Quantitative data showed that vocational education enrollment in Jammu and Kashmir has been gradually increasing over the past five years, with an estimated annual growth rate of 8–10% in the number of students joining vocational programs. However, enrollment remains unevenly distributed across gender and geographic locations.

- **Gender:** Male students accounted for approximately 70% of total enrollments, reflecting persistent gender disparities in access to vocational training. Female participation was notably lower in rural and conservative areas, often limited by socio-cultural norms.
- **Geography:** Urban centers like Srinagar and Jammu hosted the majority of vocational institutes and students, while rural and remote districts had fewer institutions and lower enrollment rates.
- **Age:** Most students were between 16 and 25 years old, indicating that vocational training largely attracts youth immediately after secondary education or during early adulthood.

Course Availability and Relevance

A wide range of vocational courses were offered across the region, spanning sectors such as information technology, healthcare, hospitality, agriculture, automotive repair, and handicrafts. However, the distribution of courses was skewed toward traditional trades like tailoring, carpentry, and plumbing, with limited availability of modern technical courses such as digital marketing, renewable energy, and advanced IT skills.

Survey responses from students and educators revealed concerns about the outdated nature of many curricula. Over 60% of students felt that the skills taught were not fully aligned with current industry demands, reducing their employability. Similarly, 75% of educators believed the curricula required periodic updating to incorporate emerging technologies and evolving labor market needs.

Quality of Training and Infrastructure

Field observations and participant feedback indicated that infrastructure and training quality varied significantly between institutions. Government-run centers generally suffered from inadequate facilities, insufficient training equipment, and overcrowded classrooms, which impeded effective skill development. In contrast, some private institutes showed better infrastructure but were often inaccessible to economically disadvantaged students due to high fees.

- Only 40% of surveyed students rated the availability of modern tools and equipment as satisfactory.
- Trainers reported challenges in delivering practical sessions due to lack of resources.
- Inconsistent power supply and limited internet connectivity in certain areas further hindered digital or technology-based training.

Instructor Competency and Pedagogical Practices

Educators interviewed expressed a strong commitment to skill development but highlighted gaps in professional training and industry exposure. Approximately 55% of instructors had undergone formal teacher training, while the rest had learned primarily through experience or short-term workshops.

The teaching methods observed tended to emphasize theoretical knowledge rather than hands-on practice. Interactive and learner-centered pedagogies were rare, with most instruction following traditional lecture formats. This disconnect was cited as a key factor limiting the effectiveness of vocational programs.

Employment Outcomes and Industry Linkages

One of the core objectives of vocational education is to enhance employability. However, survey data indicated mixed results in this regard:

- About 45% of vocational graduates secured employment within six months of course completion, mostly in low-skilled or informal sector jobs.
- Only 20% reported finding employment directly related to their training specialization.
- Self-employment was common among graduates in trades like tailoring and carpentry, but lack of business skills and financial support often limited scaling opportunities.

Industry representatives highlighted weak collaboration between training centers and local businesses. Many employers noted that vocational graduates lacked practical experience and up-to-date skills, leading to a preference for hiring candidates with formal academic qualifications or in-house training.

Socio-cultural Barriers and Perceptions

Focus group discussions revealed that socio-cultural attitudes remain a significant barrier to vocational education, particularly among parents and community elders. Many viewed vocational training as a “second-choice” option compared to academic pathways, which negatively affected student enrollment and motivation.

Gender biases were particularly strong, restricting female participation in certain trades and leading to early dropout rates. Concerns about safety, mobility, and social acceptance were frequently cited by female students and their families.

Moreover, lack of awareness about the potential career benefits of vocational education contributed to low enrollment in some districts, especially among marginalized communities.

Government Initiatives and Policy Environment

Interviews with government officials provided insights into ongoing efforts to strengthen vocational education in Jammu and Kashmir. Key initiatives included:

- Integration of vocational courses into mainstream school curricula to promote early skill development.
- Financial incentives and scholarships aimed at increasing access for disadvantaged groups.
- Partnerships with national skill development missions to standardize training and certification.

While these initiatives have shown promise, implementation challenges persist due to limited budget allocations, bureaucratic delays, and disruptions caused by regional instability.

Officials acknowledged the need for enhanced monitoring and evaluation systems to track program outcomes and ensure accountability.

Emerging Skill Demands and Future Trends

Industry leaders and policymakers emphasized the growing importance of digital literacy, healthcare, renewable energy, and hospitality sectors in Jammu and Kashmir’s future economy. There was consensus on the need to diversify vocational training offerings to include these emerging fields.

The COVID-19 pandemic accelerated digital transformation, creating demand for remote work skills, e-commerce expertise, and IT support. However, existing vocational institutions in the region have yet to fully integrate such competencies into their curricula.

Soft skills such as communication, teamwork, and problem-solving were also identified as critical for workforce readiness but are currently under-emphasized in training programs.

Summary of Key Findings

- Vocational education enrollment is growing but remains gender and regionally skewed.
- Course offerings are concentrated in traditional trades with limited alignment to future industry needs.
- Infrastructure and training quality vary widely, with many centers lacking modern equipment and skilled instructors.
- Employment outcomes are modest, with many graduates facing challenges securing relevant jobs.
- Socio-cultural attitudes and gender biases hinder broader participation and acceptance.
- Government initiatives provide a supportive policy framework but require better implementation and resource allocation.
- Emerging skill demands highlight the urgency to update curricula and expand vocational training into new sectors.

Discussion

The present study provides a comprehensive assessment of vocational education in Jammu and Kashmir, uncovering critical insights into its current status, challenges, and future

prospects. The findings reveal that while vocational education is gaining momentum as a viable pathway for youth skill development, there remain significant gaps in accessibility, curriculum relevance, training quality, and employment outcomes. These challenges are compounded by socio-cultural barriers and regional disparities, necessitating a multi-dimensional approach to reform. This discussion interprets the findings within broader theoretical and practical frameworks, highlighting implications for policy, practice, and future research.

Addressing Gender and Regional Disparities

One of the most prominent themes emerging from the study is the persistent gender imbalance and uneven regional distribution of vocational education opportunities. Male students dominate enrollment figures, particularly in technical and traditionally male-dominated trades, while female participation remains limited, especially in rural and conservative areas. This gender disparity echoes patterns observed in similar socio-cultural contexts globally, where deeply ingrained patriarchal norms restrict women's access to education and training, particularly in non-traditional fields (Kabeer, 2012; UNESCO, 2016)^[3, 7].

In Jammu and Kashmir, socio-cultural factors such as safety concerns, family responsibilities, and societal expectations constrain female mobility and participation in vocational education. The stigma attached to certain trades further discourages female learners. This scenario demands targeted interventions such as gender-sensitive recruitment, provision of safe and flexible learning environments, and awareness campaigns to reshape societal attitudes. Examples from other regions have demonstrated the effectiveness of community-based vocational programs and female-only training centers in increasing women's participation (UN Women, 2019)^[8].

Similarly, the regional disparities between urban and rural areas highlight structural inequalities in educational infrastructure and resource allocation. Rural districts, often marked by difficult terrain and limited connectivity, have fewer vocational centers and courses, limiting access for youth in these areas. Bridging this gap requires innovative solutions such as mobile training units, distance learning platforms, and government incentives to establish institutions in underserved regions (World Bank, 2020)^[9]. Ensuring equitable access across gender and geography is critical for inclusive skill development and social equity.

Curriculum Relevance and Modernization

The misalignment between vocational curricula and labor market needs surfaced as a significant barrier to the effectiveness of skill development efforts. The predominance of traditional trades in course offerings, alongside limited exposure to emerging sectors such as IT, renewable energy, healthcare, and digital services, restricts graduates' employability in a rapidly evolving economy. This finding aligns with global research emphasizing the need for vocational education to keep pace with technological advancements and economic transformation (OECD, 2019)^[5].

Curriculum modernization must not only update technical content but also integrate 21st-century skills including digital literacy, communication, problem-solving, and entrepreneurship. These competencies are increasingly demanded by employers and are crucial for adaptability in

uncertain labor markets (World Economic Forum, 2020)^[10]. The limited inclusion of soft skills and critical thinking in existing programs signals a missed opportunity to prepare learners holistically.

Collaboration with industry experts and employers in curriculum design is essential to ensure relevance and responsiveness. Partnerships can facilitate the integration of work-based learning components such as apprenticeships and internships, providing students with practical experience and easing their transition into employment. Countries that have successfully reformed vocational curricula (e.g., Germany, Singapore) often emphasize strong government-industry linkages and continuous curriculum review mechanisms (Cedefop, 2018)^[2].

Training Quality and Instructor Competency

Quality of training is foundational to skill acquisition. The study's findings on inadequate infrastructure, shortage of modern equipment, and limited access to resources in many vocational centers point to systemic underinvestment. Training quality disparities between public and private institutes underscore the challenge of ensuring standardization and equitable service delivery. For disadvantaged students, poor facility conditions diminish learning outcomes and motivation.

Equally important is the competency and pedagogical approach of instructors. The reliance on traditional, lecture-based methods and the lack of formal teacher training among many educators highlight a critical bottleneck. Adult learning theories advocate for learner-centered, experiential, and competency-based education as best practices in vocational training (Knowles, 1984)^[4]. Encouraging instructors to adopt interactive methodologies, problem-solving tasks, and use of modern technology can significantly improve learning engagement and skill mastery.

Professional development programs for trainers, including exposure to industry environments and updated pedagogical techniques, are vital. Such capacity building can also foster instructor motivation and retention. Public-private partnerships could facilitate knowledge exchange and resource sharing to uplift training quality.

Employment Outcomes and Industry Linkages

The mixed employment outcomes reported in the study underscore a significant challenge in vocational education systems worldwide: translating training into gainful employment. Although nearly half of the graduates found jobs within six months, only a minority secured positions aligned with their training, highlighting a skills mismatch and weak labor market integration.

The prevalence of informal and low-skilled employment among graduates reflects broader structural issues in the regional economy, including limited industrial diversification and formal sector job creation. Self-employment in traditional trades remains a key livelihood strategy, but without complementary entrepreneurial skills and financial support, many struggle to sustain or expand their ventures.

Improving industry linkages is critical to enhancing vocational education's labor market relevance. Establishing structured apprenticeship programs, industry advisory boards, and job placement services can facilitate better alignment between training outputs and employer needs.

Regular labor market analysis should inform program design and resource allocation. Furthermore, vocational education must expand beyond technical skills to include business development, financial literacy, and digital marketing to empower graduates in self-employment and microenterprise development.

Socio-cultural Barriers and Perceptions

The study highlights that socio-cultural perceptions of vocational education as a “second-choice” or fallback option remain pervasive in Jammu and Kashmir. This stigma diminishes enrollment motivation and community support, especially among parents who often prioritize academic pathways for their children. Changing these perceptions requires comprehensive awareness campaigns showcasing successful vocational graduates and the economic value of skills-based careers.

Addressing gender biases is particularly urgent. Safe learning environments, female mentorship programs, and community engagement can encourage more women to participate and complete vocational courses. The role of local leaders, NGOs, and media in reshaping narratives around vocational education and gender roles cannot be overstated.

Additionally, outreach to marginalized communities and economically disadvantaged groups is essential to ensure inclusive participation. Vocational education can serve as a powerful tool for social mobility if access barriers are minimized and equitable support systems are put in place.

Policy Implementation and Governance Challenges

While government policies in Jammu and Kashmir reflect a commitment to skill development through initiatives aligned with national missions like Skill India, the effectiveness of these policies depends heavily on implementation. The study reveals challenges such as bureaucratic delays, insufficient funding, and limited monitoring mechanisms that hamper program reach and quality.

Effective governance requires transparent resource allocation, robust data collection for tracking outcomes, and stakeholder coordination. Encouraging decentralization can empower local institutions to respond to context-specific needs more efficiently. Moreover, fostering collaboration between government agencies, private sector, civil society, and international partners can leverage complementary strengths and resources.

Integrating vocational education with mainstream schooling is a promising strategy that can destigmatize skill development and provide early exposure to career options. The region could benefit from adopting models where vocational modules are embedded in secondary education, allowing seamless pathways between academic and technical streams.

Preparing for the Future of Work

The evolving nature of work globally, accelerated by technological disruption and the COVID-19 pandemic, demands a forward-looking vocational education system in Jammu and Kashmir. The growing importance of digital skills, renewable energy, healthcare, and services sectors presents opportunities for curriculum innovation and diversification.

Blended learning models that combine face-to-face instruction with online platforms can overcome

geographical and infrastructural constraints in the region. Digital literacy should be treated as a foundational skill across all vocational courses. Moreover, fostering a culture of lifelong learning and continuous skill upgrading is essential for workforce resilience.

Vocational education must also emphasize adaptability, creativity, and entrepreneurship to equip learners for uncertain and dynamic labor markets. Embedding future skills and competencies will enhance not only employment prospects but also the region’s economic competitiveness.

Conclusion

The findings and discussion collectively underscore the urgent need for a holistic transformation of vocational education in Jammu and Kashmir. Addressing entrenched gender and regional inequalities, modernizing curricula, enhancing training quality, strengthening industry linkages, and overcoming socio-cultural barriers are critical steps. Effective policy implementation, informed by data and stakeholder engagement, will be crucial to realizing these goals.

Vocational education holds immense promise as a catalyst for youth empowerment, economic development, and social inclusion in the region. A coordinated, innovative, and inclusive approach that embraces future skill demands will position Jammu and Kashmir to harness its demographic dividend and navigate the challenges of the 21st-century labor market.

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