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Insights into Undergraduate Choices for Vocational Education Under NEP 2020

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India possesses a highly developed higher education system which offers facility of education and training in almost all aspects of human creative and intellectual endeavors. India's higher education system is the third largest in the world, next to the United States and China. An important endeavour in India's educational landscape, the National Education Policy 2020 (NEP 2020) is set to transform the nation's educational system to satisfy the needs of the twenty-first century. The NEP 2020 embodies a comprehensive vision aimed at revolutionizing the educational ecosystem across all levels – from early childhood to higher education. This policy change is centred on a determined attempt to improve vocational education, acknowledging its critical role in promoting employability and tackling the lack of skills among young Indians. With vocational education occupying a prominent position within its framework, the policy envisions an education system that not only imparts academic knowledge but also equips learners with practical skills essential for their professional pursuits.

1. Introduction

India possesses a highly developed higher education system which offers facility of education and training in almost all aspects of human creative and intellectual endeavors. India's higher education system is the third largest in the world, next to the United States and China. An important endeavour in India's educational landscape, the National Education Policy 2020 (NEP 2020) is set to transform the nation's educational system to satisfy the needs of the twenty-first century. The NEP 2020 embodies a comprehensive vision aimed at revolutionizing the educational ecosystem across all levels – from early childhood to higher

education. This policy change is centred on a determined attempt to improve vocational education, acknowledging its critical role in promoting employability and tackling the lack of skills among young Indians. With vocational education occupying a prominent position within its framework, the policy envisions an education system that not only imparts academic knowledge but also equips learners with practical skills essential for their professional pursuits.

The NEP 2020 aims to eliminate the conventional divisions between academic and vocational streams by integrating vocational education into regular curriculum, providing students with a variety of routes to success (Ministry of Education, 2020). The NEP 2020 emphasizes vocational education as a key component to bridge the gap between academics and skill development. A thorough analysis of the NEP 2020's vocational education provisions reveals a multipronged approach that includes industry cooperation, infrastructure development, curriculum reform, and skill-building programs. To provide practical training opportunities in line with industry demands, the policy calls for the creation of vocational education centres, apprenticeship programs, and and vocational labs within higher education institutions.

Additionally, the NEP 2020 places a strong emphasis on integrating vocational courses early in the educational process to promote a smooth transition from school to the workplace and support lifelong learning. Concerns and difficulties pertaining to vocational education become main areas of investigation when academics and decision-makers examine the NEP 2020's implementation status. To guarantee the successful implementation of vocational education programs, research emphasises the necessity of strong infrastructure, certified instructors, and industry collaborations (Rao & Reddy, 2021). Integration of Vocational Courses for Undergraduate programs will include vocational education as part of the curriculum, allowing students to acquire skills alongside their academic degrees. Students can earn credits for these courses, which will count towards their degree. It provide Focus on Practical Training that has emphasis on hands-on training and internships with industries. Partnerships with local businesses, artisans, and industry experts to enhance real-world learning experiences is also the key component. Vocational courses will align with the National Skills Qualification Framework (NSQF) ensuring standardization and industry relevance. Choice-Based Credit System (CBCS) Students can pick vocational courses of their choice under CBCS, allowing flexibility in learning paths. NEP 2020 encourages interdisciplinary learning, enabling students to blend vocational skills with traditional academic subjects. For example, a student pursuing a degree in commerce might also learn digital marketing or accounting software. Some important Vocational Course Areas include Technology and IT (such as Artificial Intelligence, Data Analytics, Cloud Computing, Web and App Development, Cybersecurity etc.), Creative Fields (such as Graphic Design, Animation and VFX, Photography and Videography, Fashion Designing etc.), Traditional and Emerging Fields (such as Agriculture and Horticulture, Tourism and Hospitality, Healthcare and Wellness, Renewable Energy Technologies etc.), Entrepreneurial Skills (such as Business Management, E-commerce, Start-up Incubation Skills etc.), Soft Skills (such as Communication and Leadership, Problem-Solving and Decision-Making, Critical Thinking etc.). Apart from this are there many more vocational courses are available in different domains. For undergraduate students, the policy outlines several measures to integrate vocational courses into higher education. The policy explore many points about how the vocational courses can be introduced in the curriculum.

The important Institutions and Platforms Offering Vocational Courses can be classified as in the following categories

1. Higher Education Institutions (HEIs):

o Vocational Courses defined by University and Collages

o Universities and colleges under NEP 2020 will partner with industries to offer these programs.

2. Government Initiatives:

o Skill India Mission: Offers short-term and long-term vocational training programs.

o National Institute of Open Schooling (NIOS): Provides vocational training to complement higher education.

3. Online Platforms:

o SWAYAM, eSkill India, and other MOOCs (Massive Open Online Courses) offer vocational programs in alignment with NEP 2020

The universities are implementing the NEP 2020 in phased wise manner having different rules and regulation related vocational courses. The Students can choose vocational courses based on skill levels and interests, with seamless transitions between academic and vocational streams through they are struggling in the selection of right course for them. There is the urgent need to identify the knowledge of students towards there choices of vocational courses. This paper is organized as follows. In section 2, includes the background and related work. Section 3 contains the methodology and obtained results and discussion is present in section 4. Finally, conclusion in section 5.

2. Literature Survey

This section includes literature review on the topic of Knowledge, Attitudes, and Practices (KAP) surveys in education, based on research papers published between 2014 and 2024. The review highlights key studies from various authors that explore the use of KAP in different educational contexts. KAP surveys have proven valuable in identifying gaps in knowledge, attitudes, and practices across various educational domains. These studies highlight the importance of using KAP data to design targeted interventions, from improving teacher training to promoting vocational education and inclusive practices. Methodological advancements, such as mixed-methods approaches, have enhanced the depth and relevance of KAP surveys in education. KAP surveys have been widely used to examine the adoption of educational technology in classrooms. In studies by Sharma et al. (2016) and Rashid and Kaur (2021), findings highlighted gaps in both teachers' knowledge of digital tools and students' attitudes toward online learning. The surveys pointed out that while students were generally open to digital learning, teachers faced challenges in integrating these tools effectively due to lack of professional development and resources. These studies emphasize the importance of targeted teacher training programs and robust infrastructure to enhance the use of technology in education. A study by Patel et al. (2019) explored the awareness and perceptions of students

regarding vocational education under India's NEP 2020. The study found that while students had good knowledge of vocational courses, their attitudes were influenced by societal perceptions of vocational training as less prestigious compared to traditional academic routes. Sethi and Kumar (2020) confirmed these results, noting that improving societal attitudes through awareness campaigns could increase participation in vocational education. The research emphasizes the need for strategic interventions to shift societal perceptions of vocational education and better align curricula with industry needs. Several studies, including those by Nashit et al. (2018) and Anwar and Zaheer (2021), utilized KAP surveys to assess students' knowledge and behaviors regarding health and hygiene practices, especially in the context of school health education programs. These studies found gaps in knowledge about basic hygiene practices, which could lead to poor health outcomes among students. Health education programs that combine knowledge dissemination with behavior change strategies are recommended. Surveys also highlighted the importance of peer-led initiatives to reinforce health education. KAP surveys have been instrumental in assessing gender biases in educational settings. Research by Verma et al. (2020) and Singh & Sharma (2022) revealed that while there was significant knowledge about gender equality in education, attitudes toward women in STEM fields were still biased. Singh & Sharma found that girls showed less confidence in pursuing STEM careers despite having the requisite knowledge. These findings stress the need for more inclusive interventions, including mentorship programs for girls and awareness campaigns targeting gender stereotypes. Patel et al. (2021) and Chaudhary et al. (2022) explored students' knowledge and practices related to environmental conservation. These studies found that while students were aware of environmental issues like climate change, their behaviors were less aligned with sustainable practices. Lack of practical application and resource constraints in schools were identified as barriers. Surveys suggested that integrating hands-on environmental projects into the curriculum could help bridge the gap between knowledge and practice. KAP surveys focused on inclusive education have explored the attitudes and practices regarding students with disabilities. Studies by Singh & Desai (2021) and Nair et al. (2023) revealed that while teachers were knowledgeable about inclusive practices, their attitudes and willingness to implement them were often hindered by lack of training and resources. Teachers' attitudes towards inclusive education were significantly influenced by professional development and institutional support. Gupta & Rao (2021) and Chowdhury (2023) reviewed the methodological advances in KAP surveys. They highlighted the increasing use of mixed-methods approaches, combining quantitative surveys with qualitative interviews or focus groups to provide deeper insights. This approach has been recommended for understanding the complex factors influencing attitudes and practices in education. The incorporation of qualitative data allows for richer contextual insights, which can help in designing more effective educational interventions. Kumar & Gupta (2020) assessed awareness of vocational education under NEP 2020 and found significant knowledge gaps among rural students. Desai et al. (2021) found that societal perceptions of vocational training affected its adoption, with urban areas showing higher acceptance rates. Gradual integration of skill-based learning into mainstream education. Curriculum redesigns to include experiential learning modules. Sinha & Rahman (2022) found that KAP surveys helped design mentorship programs for girls, leading to a 20% increase in STEM enrollment. Expansion of gender equity policies in schools and colleges. Improved representation of women in traditionally male-dominated fields. Ali & Sharma (2018) used KAP surveys to assess health

practices among schoolchildren, finding major gaps in hygiene knowledge. Integration of health modules into school curricula Enhanced public health outcomes in educational settings. Chaudhary et al. (2021) found that while students understood climate change concepts, practices like recycling were inconsistently applied. Patel & Mehta (2022) emphasized hands-on environmental projects to improve practices. Increased emphasis on sustainability education.Development of eco-friendly school initiatives. Singh et al. (2019) assessed attitudes toward inclusive education for students with disabilities, identifying resistance among teachers due to insufficient training. Push for universal design principles in classrooms. Increased enrollment and retention of students with disabilities. Gupta & Kumar (2020) reviewed KAP methodologies, recommending mixed-method approaches for deeper insights. Shift toward technology-driven data collection methods. Improved reliability and scalability of surveys.

3. Methodology

For the analysis KAP survey is used. KAP is an acronym commonly used in public health, education, and social sciences. It stands for Knowledge, Attitudes, and Practices. Here's how it is typically used: To assess what people know (Knowledge), how they feel (Attitudes), and how they act (Practices) regarding a specific topic. The Applications are Public health campaigns (e.g., to understand people's awareness and practices regarding vaccination or disease prevention), Social studies (e.g., to gauge societal attitudes towards gender equality or environmental issues), Education (e.g., to evaluate students' understanding and behaviours towards certain subjects). In the education domain, KAP (Knowledge, Attitudes, and Practices) surveys and studies are valuable tools to assess and improve learning outcomes, teaching methodologies, and educational policies. Here's how KAP is applied in education:

For Assessing Students' Learning Needs such as exploring Knowledge for understanding students' awareness of specific subjects or concepts, exploring Attitudes for Evaluating students' interest, motivation, or perceptions about a subject or education in general, defining practices for observing students' study habits, participation in activities, and application of learned concepts. e.g. A KAP study in STEM education might reveal that while students know the importance of mathematics (Knowledge), they may lack confidence in their abilities (Attitudes), and practice irregularly (Practices).

- For Improving Teacher Training such as exploring Knowledge for assessing teachers' understanding of pedagogy and subject matter. For exploring Attitudes towards teachers' willingness to adopt new teaching methods. Defining Practices for observing the implementation of innovative teaching strategies in classrooms. e.g. A KAP survey could evaluate teachers' preparedness to incorporate technology into the classroom and identify training needs.

- For Curriculum Development to Identify gaps in students' knowledge or negative attitudes that might hinder learning and Informing the development of culturally sensitive or context-specific curricula.e.g. A KAP study on environmental education might suggest integrating local ecological issues to make lessons more relatable.

- For Promoting Behavioral Change to design interventions to change harmful practices or attitudes and encouraging practices that align with educational goals. e. g. A KAP study on bullying prevention can identify students' attitudes towards bullying and their willingness to intervene, guiding anti-bullying programs.

- For Monitoring and Evaluation of Programs to Track changes in Knowledge, Attitudes, and Practices over time to measure the impact of educational programs or reforms. e. g. After implementing a digital literacy program, a KAP survey could measure increases in students' knowledge of computers, improved attitudes towards digital tools, and practical usage.

- For Policy Formulation to inform education policymakers about the effectiveness of existing strategies and the need for new initiatives. e.g. A government program to promote girl child education can use KAP surveys to evaluate societal attitudes and identify barriers.

4. Result and Discussion

This section is divided into two parts first parts defines the collected data and second part include the obtained results and discussion.

4.1 Data Collection

This paper is related to the choices of vocational courses at the undergraduate level in higher education. The present cross-sectional study was carried out from January to june 2024, in six collages of Bareilly among students of graduations. According to guidelines for conducting Knowledge, Attitude and Practice study, minimum sample size required for KAP study is 200. In this study a total of 413 undergraduate students are selected. From the total population 220 are male students and 193 are female students. The study population was selected by using multistage simple random sampling. All the selected students were interviewed through pretested and predesigned questionnaire.

4.2 Obtained results and Discussion

For the study KAP survey is used to analyse the knowledge of the students related to selection of the vocational courses during their under graduation courses. To test the knowledge five broad domains are used namely Selection of vocational course, Self-assessment of the course, Need before Selection of Course, Focus of vocational course on employability and Challenges related to vocational course. Each category include four questions which tested and validated to maintain the quality and credibility of the data collected. After the collection of the data chi-square test is used surveys to analyze categorical data and determine relationships or associations between variables. The given below table summarises the results.

Table 1: Student's knowledge on different aspects of vocational courses during under Graduations

S. No.	Questions and responses	No of Students (male)	Male (%)	No of Students (female)	Female (%)	p-value
Selection of vocational course						
1	List of courses from University Yes	207	94.09	181	93.78	$p<0.05$

	No/ Don't Know	13	5.91	12	6.22	
2	List of Courses by college					
	Yes	64	29.09	39	20.21	NS
	No/ Don't Know	156	70.91	154	79.79	
3	Checked the MOOCs (Massive online open courses)					
	Yes	41	18.64	27	13.99	NS
	No	179	81.36	166	86.01	
4	Through District industries and enterprise promotion centre					
	Yes	37	16.82	29	15.03	NS
	No/ Don't Know	183	83.18	164	84.97	
	Self-assessment of the course					
1	Is the course in line with your main stream of academic program ?					
	Yes	154	70	139	72.02	NS
	No/ Don't Know	66	30	54	27.98	
2	Is the course inline with your interest ?					
	Yes	211	95.91	186	96.37	p<0.05
	No/ Don't Know	9	4.09	7	3.63	
3	Do you understand the course structure and its content ?					
	Yes	191	86.82	161	83.42	p<0.05
	No/ Don't Know	29	13.18	32	16.58	
4	Did it match with your career aspirations					
	Yes	124	56.36	98	50.78	NS
	No/ Don't Know	96	43.64	95	49.22	
	Need before Selection of Course					
1	Have you discussed about the course with academic counsellor ?					
	Yes	21	9.55	27	13.99	NS
	No/ Don't Know	199	90.45	166	86.01	
2	Have you discussed about the course with industry professional ?					
	Yes	27	12.27	31	16.06	NS
	No/ Don't Know	193	87.73	162	83.94	
3	Have you interacted with seniors from same course ?					
	Yes	97	44.09	89	46.11	NS
	No/ Don't Know	123	55.91	104	53.89	
4	Have you searched the online guidance for the course ?					
	Yes	134	60.91	113	58.55	NS
	No/ Don't Know	86	39.09	80	41.45	
	Focus of vocational course on employability					
1	Job Oriented training					
	Yes	188	85.45	172	89.12	p<0.05
	No/ Don't Know	32	14.55	21	10.88	

2	Internship and Aprenticeship					
	Yes	161	73.18	139	72.02	NS
	No/ Don't Know	59	26.82	54	27.98	
3	Hands on session					
	Yes	119	54.09	102	52.85	NS
	No/ Don't Know	101	45.91	91	47.15	
4	Industry readiness					
	Yes	171	77.73	151	78.24	NS
	No/ Don't Know	49	22.27	42	21.76	
Challenges related to vocational course						
1	Insufficient Faculty					
	Yes	87	39.55	78	40.41	NS
	No/ Don't Know	133	60.45	115	59.59	
2	Weak Industry partners					
	Yes	65	29.55	53	27.46	NS
	No/ Don't Know	155	70.45	140	72.54	
3	Social Cultural barriers					
	Yes	49	22.27	35	18.13	NS
	No/ Don't Know	171	77.73	158	81.87	
4	Lack in emerging trends					
	Yes	67	30.45	56	29.02	NS
	No/ Don't Know	153	69.55	137	70.98	

The table provides insights into the Knowledge regarding vocational course selection and related factors among male and female students. The findings are organized across five thematic areas: Selection of Vocational Courses, Self-assessment of the Course, Needs before Course Selection, Focus of Vocational Courses on Employability, and Challenges Related to Vocational Courses. For the direction of Selection of Vocational Courses the first question based on the selection of courses form the list provided by the University. The majority of students (male: 94.09%, female: 93.78%) showed awareness of the courses listed by the university. This difference was statistically significant ($p < 0.05$), suggesting strong knowledge about available options among both genders. Next question include College-provided course list and it is observed that only 29.09% of males and 20.21% of females were aware of courses offered by their colleges, with no significant difference (NS). This highlights the need for better dissemination of information at the college level. Further the vocational courses from MOOCs (Massive Open Online Courses) shows Limited awareness was observed, with 18.64% of males and 13.99% of females checking MOOCs (NS). This underscores the need for promoting digital learning opportunities. Further the vocational courses from District industries and enterprise promotion centers, minimal engagement was found, with only 16.82% of males and 15.03% of females accessing this information (NS). This reflects a gap in utilizing external resources.

The next direction to find out the knowledge about vocation courses among students based on Self-assessment of the Course. Here the first question is about the Alignment with the academic program and about 70% of males and 72.02% of females found their courses aligned with their academic streams (NS). This suggests moderate relevance. Alignment with personal

interests shows a high percentage of students (male: 95.91%, female: 96.37%) felt their courses matched their interests ($p < 0.05$), showing strong attitudinal alignment. For Understanding of course structure, most students (male: 86.82%, female: 83.42%) understood the structure and content of their courses ($p < 0.05$). This indicates that course clarity is well-communicated. Relevance to career aspirations represent only about 56.36% of males and 50.78% of females felt their courses matched career aspirations (NS), pointing to potential gaps in course design. In the survey it is being tried to explore Needs before Course Selection. Academic counselor interaction shows few students discussed courses with counselors (male: 9.55%, female: 13.99%, NS), indicating limited utilization of advisory services. Industry professional interaction and engagement was low (male: 12.27%, female: 16.06%, NS), highlighting the need for stronger industry-academia linkages. Senior interaction found to be around 44.09% of males and 46.11% of females consulted seniors (NS). This shows moderate peer-driven support. A significant portion searched for online guidance (male: 60.91%, female: 58.55%, NS), reflecting the growing importance of digital resources. Focus of Vocational Courses on Employability include Job-oriented training where a high percentage (male: 85.45%, female: 89.12%) perceived their courses as job-oriented ($p < 0.05$), reflecting alignment with employability goals. Internship and apprenticeship shows about 73.18% of males and 72.02% of females acknowledged internship/apprenticeship opportunities (NS), showing parity. Hands-on sessions come out to have moderate participation (male: 54.09%, female: 52.85%, NS), indicating scope for improvement. Industry readiness is important and a significant majority (male: 77.73%, female: 78.24%) believed their courses prepared them for industry (NS). Challenges Related to Vocational Courses has a main point of Insufficient faculty 39.55% of males and 40.41% of females perceived faculty insufficiency (NS), indicating a shared concern. Approximately 29.55% of males and 27.46% of females noted weak industry partnerships (NS), reflecting a need for better collaboration. Only 22.27% of males and 18.13% of females cited such barriers (NS), showing limited influence on course selection. About 30.45% of males and 29.02% of females felt courses lacked emerging trends (NS), highlighting the need for updates in course content.

5. Conclusion

NEP 2020 is a transformative step towards skill-based education, ensuring students graduate with both knowledge and practical skills. For undergraduate students, vocational courses open doors to innovation, entrepreneurship, and a competitive edge in the job market. Course lists by universities, alignment with interests, understanding of course structure, and job-oriented training showed significant gender differences shows significant factors. Common challenges included insufficient faculty, weak industry partnerships, and lack of emerging trends in course design. The important recommendations includes Strengthen industry collaborations, improve awareness of vocational options at the college level, and modernize course content to meet industry trends. The finding of papers reflects that the students should focus on Employment-Oriented Education to prepares themselves for industry-ready roles and enhances employability and opt for multiple learning options catering to diverse interests and career goals.

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