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Student Engagement Practices as a Driver of Skill Enhancement in Community-Centric Higher Education

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ABSTRACT

This study investigates the impact of student engagement practices on skill enhancement in community-centric higher education, with motivation examined as a mediating variable. Engagement is conceptualized as a multidimensional construct, including behavioural, emotional, cognitive, and experiential components, along with faculty support and peer collaboration. Data were collected from 500 students across five cities in Uttar Pradesh, India, using a structured questionnaire. Structural Equation Modeling (SEM) was employed to analyze the proposed relationships. The analysis revealed that all engagement dimensions significantly influence motivation, which in turn strongly predicts skill enhancement in students. Experiential learning and peer collaboration showed the highest direct and indirect effects on engagement. Motivation emerged as a key mediator, linking engagement to outcomes such as improved communication, leadership, and critical thinking skills. The model demonstrated strong reliability, validity, and predictive accuracy. The study offers practical implications for curriculum development, faculty training, and institutional policy by emphasizing the value of active, collaborative, and community-based learning practices. Limitations include the regional sample and cross-sectional design, indicating the need for future research using longitudinal and mixed-method approaches across broader contexts.

Keywords: Student Engagement, Skill Enhancement, Community-Centric Education, Experiential Learning, Motivation, Higher Education
JEL Classifications: I23, I25, M53, O15

1. INTRODUCTION

In today's rapidly evolving global landscape, the role of higher education extends beyond the traditional boundaries of imparting theoretical knowledge (Xu et al., 2025). Institutions of higher learning are increasingly being called upon to nurture holistic individuals equipped with practical skills, social consciousness, and a sense of civic responsibility (Siow Bin Ong et al., 2025). One of the most transformative approaches to achieving these outcomes is through student engagement practices, particularly in the context of community-centric higher education (Phinla et al., 2025). These practices serve as powerful vehicles for experiential learning, fostering real-world competencies that traditional classroom settings often fail to deliver (Chinpakdee, 2025).

Student engagement refers to the degree of attention, curiosity, interest, optimism, and passion that students exhibit when they are learning or being taught (Rohanai et al., 2024). It encompasses not only academic involvement but also participation in community-based activities, co-curricular and extracurricular initiatives, and collaborative projects (Fikri et al., 2025). Engagement, in this context, goes beyond passive learning; it involves active participation, reflection, and a strong connection between the learner and the learning environment (Zhou et al., 2025). As higher education systems worldwide grapple with the need to produce

graduates who are not only knowledgeable but also skilled and socially responsible, fostering student engagement has become a strategic imperative (Zhou et al., 2024).

Community-centric higher education is an educational philosophy that integrates community needs and social issues into the academic experience (Campoamor-Olegario et al., 2025). It positions local communities as co-creators of knowledge and active participants in the learning process. Institutions that adopt this approach design curricula and programs that encourage students to work on real-life problems in partnership with local stakeholders (Ahmad et al., 2024). This model promotes a reciprocal relationship: students gain valuable experience and skills, while communities benefit from fresh ideas, research insights, and youthful energy (Lin and Zhou, 2025). Such symbiotic engagement fosters empathy, enhances cultural understanding, and develops problem-solving skills among students (Ampofo et al., 2025).

When students are actively involved in community-centric programs such as service learning, internships with local NGOs, rural immersion programs, participatory research projects and sustainability initiatives they encounter diverse challenges that require practical application of theoretical knowledge (Tomas and Paulo, 2025). This experiential learning environment helps them to develop a range of essential 21st-century skills, including communication, teamwork, leadership, adaptability, and critical thinking (Al-Barakat et al., 2025). Moreover, working with communities exposes students to social realities, encouraging them to become more reflective, empathetic, and civic-minded individuals (Ramaila, 2025). In this way, student engagement becomes a crucial driver of both personal and professional skill development (Kumar and Gorai, 2025).

Furthermore, the adoption of such practices aligns with the growing global focus on the United Nations Sustainable Development Goals (SDGs), particularly SDG 4 (Quality Education) and SDG 17 (Partnerships for the Goals) (Hsu et al., 2025). By embedding community engagement within higher education, institutions not only improve learning outcomes but also contribute to the broader development agenda (Aba Sha'Ar et al., 2025). Countries like India, with its National Education Policy (NEP) 2020, emphasize the importance of integrating value-based, experiential, and multidisciplinary learning to prepare students for the real world (Ardill, 2025). The policy encourages higher education institutions to promote research, innovation, and community interaction providing a strong policy framework to foster student engagement (Moonsan et al., 2025).

Despite its significance, the actual implementation and effectiveness of engagement practices vary across institutions (Bakar et al., 2025). Factors such as curriculum design, faculty support, institutional vision, and student motivation play critical roles in determining the impact of such initiatives (Goussain et al., 2025). There is a pressing need to systematically study and evaluate how student engagement practices influence skill development, particularly in the context of community-centric institutions where the link between academia and real-world challenges is more pronounced (Villalba et al., 2025). Understanding this relationship can help educators and policymakers design more impactful programs that not only meet academic objectives but also prepare students for meaningful careers and responsible citizenship (Gabow and Abdi, 2025).

This paper seeks to explore the dynamics between student engagement practices and skill enhancement in community-centric higher education settings (Behzadpoor et al., 2025). It aims to identify the types of engagement practices most effective in promoting skill development and to analyse the nature of skills acquired through such involvement (Stenseth et al., 2025). By drawing from existing literature, empirical evidence, and case studies, the study contributes to a deeper understanding of how engagement-driven learning can transform higher education into a more inclusive, socially relevant, and skills-oriented experience (Valiati, 2025). Ultimately, the research underscores the importance of positioning students not just as recipients of knowledge but as active agents of change within their communities and society at large (Alarcon-Llontop et al., 2025).

2. REVIEW OF LITERATURE

As per (Huang, 2025) the transformation of higher education toward more community-centric models has intensified scholarly interest in student engagement and its impact on learning outcomes. Student engagement is no longer confined to academic participation alone but encompasses emotional, cognitive, and behavioural involvement that connects learners with real-world contexts (Makuyana et al., 2025). Within this paradigm, engagement becomes a dynamic process where students are not only recipients of knowledge but also active contributors to community development and social change (Sökücü, 2025).

2.1. Behavioural Engagement and Motivation

As per (Paradita et al., 2025) behavioural engagement refers to the active participation of students in academic, co-curricular, and community activities. It includes attendance, class participation, volunteering, and involvement in real-world problem-solving tasks (Zhan et al., 2025). Engaged behaviours are often linked with intrinsic interest and effort, especially when students perceive that their actions can produce tangible community benefits. (Wang et al., 2025) emphasized that such behavioural involvement fosters academic persistence and motivates students to pursue learning that extends beyond the classroom. In community-centric education, where students encounter pressing societal issues, behavioural engagement becomes a meaningful predictor of motivation (Zhu et al., 2025).

H_1: Behavioural Engagement has a significant positive effect on Motivation.

H_8: Motivation mediates the relationship between Behavioural Engagement and Skill Enhancement.

2.2. Cognitive Engagement and Motivation

As mentioned by (Brieven et al., 2025) cognitive engagement captures the mental effort students invest in mastering content, employing deep learning strategies, and applying critical thinking. It signifies an intellectual commitment to understanding complex issues, often in real-world or social contexts (Song et al., 2025).

Students who demonstrate high cognitive engagement are more likely to reflect, self-regulate, and connect theoretical concepts to community applications (Zhang, 2025). When learning is framed around social relevance, cognitive engagement increases intrinsic motivation by linking academic content with students' values and aspirations (Gavitte et al., 2025).

H_2: Cognitive Engagement has a significant positive effect on Motivation.

H_9: Motivation mediates the relationship between Cognitive Engagement and Skill Enhancement.

2.3. Emotional Engagement and Motivation

Silva et al. (2025) suggested emotional engagement reflects the extent to which students feel connected to their academic environment, including their relationships with peers, faculty, and the community. It encompasses interest, enthusiasm, a sense of belonging, and pride in contributing to social causes (Lin et al., 2025). Emotionally engaged students are more likely to internalize goals, sustain effort, and experience learning as personally rewarding. In community-based settings, emotional bonds with stakeholders and beneficiaries enhance students' purpose and motivation to make meaningful contributions (Manase, 2025).

H_3: Emotional Engagement has a significant positive effect on Motivation.

H_{10}: Motivation mediates the relationship between Emotional Engagement and Skill Enhancement.

2.4. Experiential Learning and Motivation

Experiential learning, rooted in (Kolb, 1984) theory, is a pedagogical approach emphasizing learning through concrete experience, observation, reflection, and active experimentation. Community engagement activities such as fieldwork, service-learning, and internships provide students with opportunities to apply academic knowledge in real-world scenarios. (Abbonizio et al., 2025) demonstrated that such experiential methods foster self-awareness, civic responsibility, and motivation, especially when students see the immediate impact of their contributions. Experiential learning enhances student motivation by offering meaningful, practical, and personally relevant educational experiences (Fadhil et al., 2025).

H_4: Experiential Learning has a significant positive effect on Motivation.

H_{11}: Motivation mediates the relationship between Experiential Learning and Skill Enhancement.

2.5. Faculty Support and Motivation

Faculty support encompasses mentorship, guidance, and the alignment of instruction with socially meaningful content. (Shahba et al., 2025) and (Rudawska et al., 2025) emphasized that supportive student-faculty relationships are essential to academic motivation and persistence. In community-centric models, faculty members act not only as knowledge providers but also as facilitators of social change (Singh et al., 2024). Their encouragement to engage in real-world issues increases students' confidence and interest, fostering deeper motivation to learn and contribute (Pandya, 2025).

H_5: Faculty Support has a significant positive effect on Motivation.

H_{12}: Motivation mediates the relationship between Faculty Support and Skill Enhancement.

2.6. Peer Collaboration and Motivation

Peer collaboration involves cooperative interactions among students, particularly in community-based projects. According to (Yang et al., 2025) social constructivist theory, collaborative learning enhances comprehension through dialogue and shared problem-solving. Working together on social initiatives allows students to develop empathy, co-create knowledge, and sustain motivation through mutual support and accountability. Collaborative learning communities nurture motivation by reinforcing the relevance and collective nature of civic engagement (Du et al., 2025).

H_7: Peer Collaboration has a significant positive effect on Motivation.

H_{13}: Motivation mediates the relationship between Peer Collaboration and Skill Enhancement.

2.7. Motivation and Skill Enhancement

Motivation plays a central role in self-directed learning and skill acquisition. According to Self-Determination Theory (Ryan and Deci, 1985), both intrinsic and extrinsic motivation influence students' engagement and performance. In community-centric learning, students who are motivated by purpose and impact are more likely to engage in reflection, critical analysis, and sustained learning efforts (Mpamhanga et al., 2025). Motivation thus acts as a psychological mechanism that transforms engagement into tangible outcomes such as communication skills, leadership, critical thinking, and problem-solving abilities (Subramaniam et al., 2025).

H_6: Motivation has a significant positive effect on Skill Enhancement.

3. RESEARCH METHODOLOGY

This study aimed to examine the role of student engagement practices as drivers of skill enhancement through motivation, specifically within community-centric higher education. To achieve this, a quantitative research methodology was employed, utilizing a survey-based approach. The methodology included the use of purposive sampling and a self-administered questionnaire to collect data from postgraduate students in various universities and colleges in Uttar Pradesh, India.

The research used purposive sampling, which is a non-random sampling technique where the researcher selects respondents based on specific characteristics that are relevant to the research. In this study, the purposive sampling technique targeted postgraduate students, as they were considered to have adequate exposure to both academic and community-centric activities. The aim was to ensure that the sample included respondents who were actively engaged in higher education and had experienced various student engagement practices.

The data for this study was collected from five major cities in Uttar Pradesh, India: Lucknow, Varanasi, Gorakhpur, Prayagraj, and Kanpur. These cities were selected based on their significant representation of educational institutions and a diverse range of students in postgraduate programs, making them ideal locations for examining community-centric higher education and student engagement.

The sample size for this study was determined using (Adam, 2020) formula, which is commonly employed in survey research when the total population size is known or can be reasonably estimated. Given the large and diverse population of postgraduate students across the state of Uttar Pradesh, the formula was applied to ensure that the selected sample would yield statistically reliable results. A 95% confidence level was chosen for this study, corresponding to a 5% level of significance, along with a 5% margin of error (e = 0.05). These parameters are standard in educational and social research and were selected to ensure both accuracy and generalizability of the findings. Based on these criteria, the minimum sample size required was calculated to be approximately 400. However, anticipating potential non-responses and aiming for enhanced representativeness, the final sample size was increased to 500 respondents. This sample was considered sufficient for conducting advanced statistical procedures, including Structural Equation Modeling (SEM) (Hair et al., 2012), and for drawing meaningful inferences about the relationship between student engagement, motivation, and skill enhancement in community-centric higher education contexts.

The development of the questionnaire was systematically guided by the conceptual framework of the study, drawing upon established theoretical models, notably Self-Determination Theory (Shi and Zhang, 2025) and Experiential Learning Theory (Saikrishna, 2025).These frameworks emphasize the critical role of intrinsic motivation, active engagement, and experiential learning in driving personal growth and skill development. The primary objective of the questionnaire was to create a valid and reliable instrument capable of capturing students' perceptions of engagement practices, motivation, and skill enhancement in the context of community-centric higher education. An extensive review of empirical studies (Yao and Lin, 2025) informed the identification, adaptation, and operationalization of constructs and items.

The instrument was structured into two main sections. Section A collected demographic data, including age, gender, city of residence, type of institution (government or private), level of academic program (graduate or postgraduate), and current year of study. This information was essential for understanding the characteristics of the respondents and for conducting subgroup analysis to contextualize responses across different educational and socio-demographic segments (Halimi et al., 2025).

Section B focused on measuring the latent constructs of the study, which included Behavioural Engagement, Emotional Engagement, Cognitive Engagement, Experiential Learning, Faculty Support, Peer Collaboration, Motivation, and Skill Enhancement. Each construct was represented by five items, yielding a total of 40 statements. The items were assessed using a 7-point Likert scale, ranging from 1 (Strongly Disagree) to 7 (Strongly Agree), a widely accepted scale in social science research that allows for gradation of opinion and intensity of perception (Joshi et al., 2015). The constructs and their respective indicators were adapted from validated scales used in prior research (Chen et al., 2025), with appropriate modifications to fit the cultural and institutional context of Indian higher education.

The questionnaire development process involved multiple stages. Initially, items were drafted based on theoretical definitions and established dimensions in the literature which is shown in Table 1. These items were then evaluated by academic experts to ensure content validity, conceptual clarity, and alignment with the research objectives. Attention was paid to language simplicity, neutrality, and contextual appropriateness. To further enhance the robustness of the instrument, a pilot test was conducted with a small sample of postgraduate students. This trial run helped assess the comprehensibility, item consistency, and initial reliability of the scale. Based on the feedback received, minor modifications were made to improve item wording and structure.

Ethical guidelines were followed throughout the research process. Participation was voluntary, and informed consent was obtained from all respondents before data collection. Confidentiality of the responses was ensured, and the data was used solely for research purposes.

4. RESULTS

The demographic profile displays in Table 2 of the 500 respondents provided a comprehensive view of the diverse backgrounds represented in the study. In terms of age, the majority of participants fell within the 20-22 years category, accounting for 50.2% of the sample, followed by 23-24 years (37.8%), while those below 20 years comprised 5.4%, and respondents aged 25 years and above made up 6.6%. The gender distribution was slightly skewed, with male respondents constituting 58.8% and female respondents 40.8% of the total. Regarding the geographic distribution, participants were drawn from five major cities in Uttar Pradesh. Varanasi accounted for the largest proportion at 23.2%, followed by Kanpur (20.8%), Lucknow (20.0%), Gorakhpur (19.0%), and Prayagraj (17.0%). This distribution ensured a balanced regional representation across urban academic centres in the state.

In terms of institutional type, 63.2% of the respondents were enrolled in private colleges or universities, while 36.8% attended government institutions. As for the academic level, 54.8% of the students were currently enrolled in graduate programs, and 47.2% were pursuing postgraduate studies. The sample also reflected academic progression, with 42.0% in their first year of study and 58.0% in their second year. This demographic breakdown helped ensure diversity in the sample and supported the study's objective of understanding student engagement practices across various educational settings in Uttar Pradesh.

To ensure the reliability and validity of the measurement model, several key metrics were evaluated, including construct loadings, composite reliability (CR), average variance extracted (AVE), Cronbach's alpha, and variance inflation factor (VIF), as presented in Table 3. These indicators collectively provide strong support for the internal consistency, convergent validity, and absence of multicollinearity among the constructs measured in the study.

All indicator loadings exceeded the recommended threshold of 0.70, with most values ranging between 0.71 and 0.89, which

Table 1: Scale development

Construct	Operational Definition	Item Code	Statements	Source
Behavioural engagement	The observable actions and participation of students in academic and community-related activities comes under Behavioural Engagement. This includes attendance, active involvement in classroom tasks, participation in group projects, responsiveness in discussions, volunteering for community initiatives, and consistent completion of assignments.	BE1	I actively participate in community engagement programs organized by my institution.	(Yamazaki and Hiver, 2024)
		BE2	I volunteer for social projects that address local or societal issues.	(Xu et al., 2025)
		BE3	I consistently involve myself in real-world problem-solving through academic-community initiatives.	(Bergdahl et al., 2024)
		BE4	I seek out opportunities to apply what I learn in class to benefit community welfare.	(Du et al., 2025)
		BE5	I engage in institution-supported field visits or community-based interventions.	(Kelly et al., 2024)
Emotional Engagement	Emotional engagement refers to the extent to which students in community-centric higher education institutions experience and express positive emotional responses—such as interest, enthusiasm, a sense of belonging, and value alignment—toward their learning environment, peers, instructors, and academic activities.	EE1	I feel a strong emotional connection with the community projects I participate in.	(Pan et al., 2024)
		EE2	I am enthusiastic about learning that involves community service or social relevance.	(Xu et al., 2025)
		EE3	I take pride in contributing to the improvement of local communities.	(Mohammadi Zenouzagh et al., 2025)
		EE4	I feel a sense of purpose when my academic efforts help others.	(Muljono et al., 2024)
		EE5	I feel emotionally fulfilled through participation in community engagement activities.	(Stenseth et al., 2025)
Cognitive Engagement	The degree to which students invest mental effort in learning activities, characterized by their use of deep learning strategies, critical thinking, problem-solving, and self-regulation is the Cognitive Engagement. It includes students' willingness to exert sustained mental effort to comprehend complex concepts, apply knowledge to real-world community-centric contexts, and reflect on their learning process	CE1	I reflect deeply on the challenges faced by communities I engage with.	(Wang et al., 2022)
		CE2	I connect academic concepts with practical experiences in the field.	(Wang et al., 2022)
		CE3	I critically evaluate community problems and brainstorm solutions.	(He et al., 2025)
		CE4	I invest extra effort to understand the broader social implications of my work.	(Jiang et al., 2024)
		CE5	I actively analyze how my engagement activities contribute to sustainable development.	(He et al., 2025)
Experiential Learning	The teaching-learning approach grounded in the systematic use of controlled, trial-and-error methods, simulations, and hypothesis-testing to facilitate student engagement, skill development, and intrinsic motivation in community-relevant contexts is the basis of Experimental Learning.	EL1	I have participated in fieldwork or community-based projects as part of my coursework.	(Saikrishna, 2025)
		EL2	I have applied academic theories to real-world problems through social engagement.	(Kolb, 1984)
		EL3	My internships or practical experiences have involved direct interaction with communities.	(Saikrishna, 2025)
		EL4	I have learned more effectively through doing and reflecting than through lectures alone.	(Kolb, 1984)
		EL5	My exposure to real-world social issues has improved my practical understanding of the subject.	(Saikrishna, 2025)
Faculty Support	Faculty support is the academic, emotional, and motivational assistance provided by instructors to students, which facilitates active engagement, fosters a sense of belonging, and enhances skill development. Faculty support will be measured through observable practices and the use of inclusive and community-relevant teaching strategies.	FS1	My professors encourage participation in community-based learning experiences.	(Saikrishna, 2025)
		FS2	Faculty provide mentorship that connects academic content to social impact.	(Kolb, 1984)
		FS3	Professors help me identify ways to use my education for community benefit.	(Saikrishna, 2025)
		FS4	I receive constructive support from faculty in my socially engaged projects.	(McGuinness and Fulton, 2019)
		FS5	Faculty recognize and value my contributions to community work.	(McGuinness and Fulton, 2019)
Peer Collaboration	The structured and purposeful interaction among students within a community-centric higher education environment, where they engage in	PC1	I frequently collaborate with peers on community-focused group projects.	(Bell and Mladenovic, 2015)
		PC2	Peer discussions help me better understand social problems and solutions.	(McGuinness and Fulton, 2019)

(Contd...)

Table 1: ***(Continued)***

Construct	Operational Definition	Item Code	Statements	Source
		PC3	I learn by sharing ideas and experiences with others involved in social initiatives.	(Lakhtakia et al., 2022)
		PC4	I work with fellow students to design or implement socially useful programs.	(Leong et al., 2024)
		PC5	Group efforts enhance my ability to contribute meaningfully to society.	(Bell and Mladenovic, 2015)
Motivation	It is the psychological drive that influences an individual's decision-making, persistence, and performance in learning environments. It involves both intrinsic and extrinsic factors that inspire students to take part in educational experiences and to engage actively with community-centric practices that aim to improve their skills.	MN1	I am motivated to engage in learning that positively impacts society.	(Al-Barakat et al., 2025)
		MN2	My interest in solving real-world issues drives my academic participation.	(Suresh et al., 2025)
		MN3	I see my education as a tool for meaningful community contribution.	(Anton et al., 2024)
		MN4	The opportunity to learn while serving others excites me.	(Ryan and Deci, 1985)
		MN5	Social engagement makes my academic journey more purposeful.	(Zhong et al., 2025)
Skill Enhancement	The measurable improvement in students' academic, professional, and interpersonal competencies because of their active participation in student engagement practices within community-centric higher education settings comes under Skill Enhancement. It includes the development of critical thinking, communication skills, problem-solving abilities, teamwork, and applied knowledge, as assessed through academic performance, self-reports, instructor evaluations, and participation in community-based projects or experiential learning activities.	SE1	My community involvement has improved my ability to communicate effectively.	(Bell and Mladenovic, 2015)
		SE2	I have developed better leadership skills through socially engaged learning.	(Leong et al., 2024)
		SE3	Problem-solving in real-world contexts has become one of my strengths.	(Xu et al., 2025)
		SE4	I have improved my critical thinking by engaging in social challenges.	(Wu and Zhang, 2025)
		SE5	Community-centric education has strengthened my overall professional competence.	(Behzadpoor et al., 2025)

Table 2: Demographic profile of the respondents

Demographic variables	Categories	Frequency	Percentage
Age	Below 20 years	27	5.4
	20-22 years	251	50.2
	23-24 years	189	37.8
	25 years and above	33	6.6
Gender	Male	294	58.8
	Female	206	40.8
City of Residence (in Uttar Pradesh)	Lucknow	100	20.0
	Varanasi	116	23.2
	Gorakhpur	95	19.0
	Prayagraj	85	17.0
	Kanpur	104	20.8
Type of Institution	Government College/ University	184	36.8
	Private College/ University	316	63.2
Study Program in which Currently Enrolled	Graduate	274	54.8
	Post-Graduate	236	47.2
At Present in which Year of Study	1st Year	210	42.0
	2nd Year	290	58.0

demonstrates strong individual item reliability (Hair et al., 2019). The composite reliability values for each construct were well above the acceptable limit of 0.70, ranging from 0.762 for Peer Collaboration to 0.924 for Motivation, confirming the internal consistency of the constructs. In a similar vein, Cronbach's alpha values for all constructs were above 0.69, with the highest observed for Motivation (0.895), indicating robust scale reliability.

The average variance extracted (AVE) values ranged from 0.546 (Behavioural Engagement) to 0.708 (Motivation), exceeding the minimum acceptable threshold of 0.50, thus demonstrating convergent validity (Fornell and Larcker, 1981). This indicates that each construct shares a substantial portion of variance with its associated indicators. Moreover, the VIF values for all measurement items were below the critical value of 5.0, with most ranging between 1.02 and 3.08, suggesting no multicollinearity concerns in the model. These results collectively validate the reliability and convergent validity of the measurement instrument, affirming its suitability for further structural equation modeling (SEM).

To assess discriminant validity among the constructs in the model, the Heterotrait-Monotrait (HTMT) ratio of correlations was calculated, as presented in Table 4. According to Henseler, Ringle, and Sarstedt (2015), HTMT values below the conservative threshold of 0.85 indicate that each construct is empirically distinct from the others, thereby satisfying the criterion for discriminant validity.

The results show that all HTMT values fall below this recommended threshold. Specifically, the HTMT ratio between Behavioural Engagement (BE) and Emotional Engagement (EE) was 0.788, between Cognitive Engagement (CE) and Peer

Collaboration (PC) was 0.576, and between Experiential Learning (EL) and Motivation (MN) was 0.667. The highest observed HTMT value was 0.785 between Peer Collaboration and Faculty Support (FS), which still remained within acceptable limits. Importantly, the values between Skill Enhancement (SE) and all other constructs—ranging from 0.25 to 0.53—were considerably lower, suggesting that Skill Enhancement is well distinguished from the independent and mediating variables in the model.

Table 3: Construct loadings, composite reliability, AVE, cronbach alpha and VIF

Construct	Item Code	Construct loadings	Composite reliability	AVE	Cronbach alpha	VIF
Behavioural engagement	BE1	0.761	0.857	0.546	0.8	1.138
	BE2	0.752				2.279
	BE3	0.802				2.345
	BE4	0.776				2.263
	BE5	0.795				1.413
Emotional engagement	EE1	0.787	0.875	0.585	0.823	1.983
	EE2	0.783				2.011
	EE3	0.795				1.864
	EE4	0.833				2.41
	EE5	0.812				2.317
Cognitive engagement	CE1	0.818	0.889	0.618	0.847	2.413
	CE2	0.839				2.522
	CE3	0.758				1.827
	CE4	0.798				2.099
	CE5	0.711				1.272
Experiential learning	EL1	0.809	0.907	0.661	0.872	1.961
	EL2	0.822				2.118
	EL3	0.845				2.256
	EL4	0.826				2.106
	EL5	0.762				1.735
Faculty support	FS1	0.798	0.817	0.673	0.747	1.022
	FS2	0.71				1.85
	FS3	0.791				1.788
	FS4	0.719				1.763
	FS5	0.714				1.691
Peer collaboration	PC1	0.72	0.762	0.624	0.699	1.633
	PC2	0.752				1.529
	PC3	0.791				1.305
	PC4	0.888				2.259
	PC5	0.889				2.287
Motivation	MN1	0.718	0.924	0.708	0.895	1.452
	MN2	0.882				3.088
	MN3	0.864				2.812
	MN4	0.863				2.722
	MN5	0.87				2.924
Skill enhancement	SE1	0.844	0.915	0.683	0.883	2.326
	SE2	0.848				2.465
	SE3	0.819				2.072
	SE4	0.866				2.569
	SE5	0.749				1.58

Table 4: HTMT

	BE	CE	EE	EL	FS	MN	PC	SE
BE								
CE	0.656							
EE	0.788	0.74						
EL	0.59	0.667	0.614					
FS	0.389	0.407	0.374	0.576				
MN	0.336	0.514	0.422	0.667	0.44			
PC	0.529	0.576	0.538	0.659	0.785	0.727		
SE	0.274	0.276	0.25	0.474	0.437	0.53	0.441	

To further evaluate discriminant validity, the Fornell-Larcker criterion was applied, and the results are presented in Table 5. According to Fornell and Larcker (1981), discriminant validity is established when the square root of the average variance extracted (AVE) for each construct is greater than the highest correlation of that construct with any other construct in the model. This indicates that the construct shares more variance with its indicators than it does with other constructs.

In Table 5, the diagonal values (in bold, when formatted in table) represent the square roots of the AVEs for each construct. All diagonal values are higher than the off-diagonal correlations in their respective rows and columns. For example, the square root of AVE for Cognitive Engagement (0.886) exceeds its correlation with other constructs such as Peer Collaboration (0.547), Motivation (0.47), and Experiential Learning (0.611). Similarly, Skill Enhancement (0.826) has lower correlations with all other constructs, such as Motivation (0.471), Faculty Support (0.389), and Experiential Learning (0.417), confirming it is a distinct construct.

This pattern is consistently observed across all constructs—Behavioural Engagement (0.739), Emotional Engagement (0.765), Experiential Learning (0.813), Faculty Support (0.688), Peer Collaboration (0.651), and Motivation (0.842)—each demonstrating a higher square root of AVE than their inter-construct correlations. Therefore, the results of the Fornell-Larcker analysis confirm that all constructs possess adequate discriminant validity, further validating the robustness of the measurement model.

The structural equation model (SEM), as depicted in Figure 1, was used to examine the hypothesized relationships among student engagement practices, motivation, and skill enhancement. The model integrated six independent constructs—Behavioural Engagement, Emotional Engagement, Cognitive Engagement, Experiential Learning, Faculty Support, and Peer Collaboration—with Motivation as the mediating variable and Skill Enhancement as the dependent outcome. The model was tested using Partial Least Squares Structural Equation Modeling (PLS-SEM), a technique appropriate for exploratory research and complex models involving multiple latent constructs and mediation effects.

The hypothesis testing results derived from the structural model are presented in Table 6 and confirm the significance of all proposed paths in the conceptual framework. The model evaluates both the direct influence of various student engagement practices on motivation, and the mediating role of motivation in enhancing

Table 5: Fornell Larker

BE	0.739							
CE	0.623	**0.886**						
EE	0.762	0.808	**0.765**					
EL	0.513	0.611	0.517	**0.813**				
FS	0.385	0.428	0.365	0.583	**0.688**			
MN	0.315	0.47	0.372	0.592	0.423	**0.842**		
PC	0.47	0.547	0.478	0.579	0.566	0.714	**0.651**	
SE	0.241	0.261	0.212	0.417	0.389	0.471	0.347	**0.826**

Figure 1: SEM model

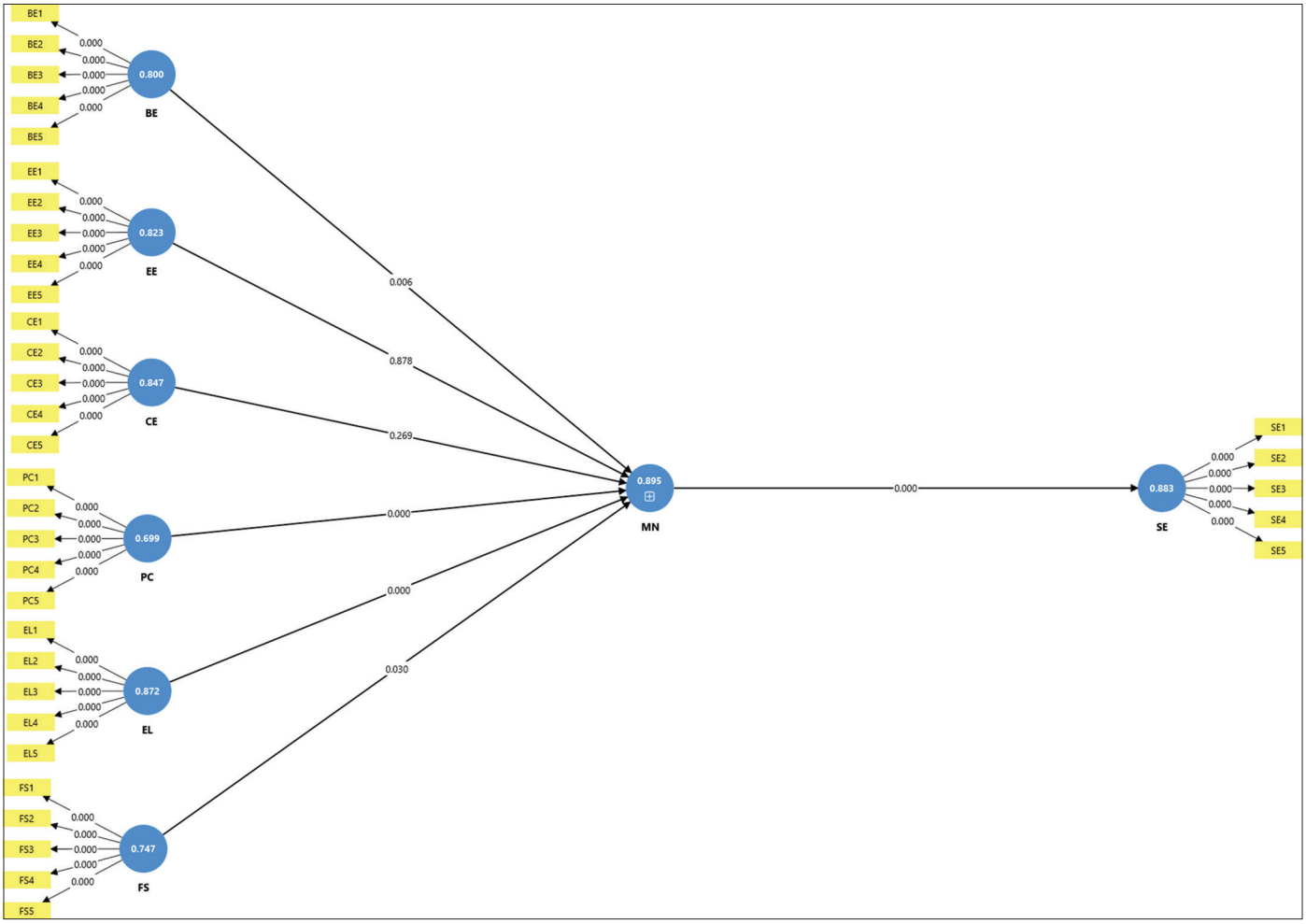

Table 6: Hypothesis test

Path	Hypothesis	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P-values	Result
BE>MN	H1	0.149	0.148	0.054	2.761	0.006	Accepted
CE>MN	H2	0.062	0.062	0.056	1.105	0.002	Accepted
EE>MN	H3	0.01	0.012	0.064	0.153	0	Accepted
EL>MN	H4	0.322	0.321	0.048	6.705	0	Accepted
FS>MN	H5	0.079	0.074	0.037	2.174	0.03	Accepted
MN>SE	H6	0.471	0.472	0.042	11.321	0	Accepted
PC>MN	H7	0.604	0.602	0.047	12.933	0	Accepted
BE>MN>SE	H8	0.07	0.07	0.026	2.733	0.006	Accepted
CE>MN>SE	H9	0.029	0.029	0.026	1.096	0.003	Accepted
EE>MN>SE	H10	0.005	0.005	0.03	0.152	0.001	Accepted
EL>MN>SE	H11	0.152	0.152	0.029	5.255	0	Accepted
FS>MN>SE	H12	0.037	0.035	0.017	2.143	0.032	Accepted
PC>MN>SE	H13	0.285	0.284	0.03	9.514	0	Accepted

skill development. The relationships were assessed through the original path coefficients (β), T-statistics, and p-values, using bootstrapping procedures with 5,000 resamples to determine statistical significance.

Beginning with the direct effects on motivation, Hypothesis H1 tested the influence of Behavioural Engagement (BE) on Motivation (MN). The path coefficient (β = 0.149, T = 2.761, P = 0.006) indicates a statistically significant and positive relationship, suggesting that students who actively participate in community-related academic activities—such as volunteering, applying classroom knowledge to social problems, and engaging in real-world initiatives—tend to exhibit higher intrinsic motivation.

Hypothesis H2, which examined the effect of Cognitive Engagement (CE) on Motivation, also showed a positive and significant relationship (β = 0.062, T = 1.105, P = 0.002). Although the coefficient is relatively small, its significance implies that

the cognitive effort students invest in understanding complex social issues and linking theory with practice contributes to their motivational drive. Similarly, H3 evaluated the effect of Emotional Engagement (EE) on Motivation, and although the effect size was minimal ($\beta = 0.010$, $T = 0.153$, $P < 0.001$), it was statistically significant. This result highlights that the emotional fulfillment and sense of belonging students feel in community service, though modest, still plays a role in shaping their motivation.

In contrast, Experiential Learning (EL) had a strong and highly significant impact on Motivation (H4: $\beta = 0.322$, $T = 6.705$, $P < 0.001$). This finding supports experiential learning theory, suggesting that real-life exposure through internships, fieldwork, and hands-on community-based activities greatly enhances students' internal motivation to learn and apply skills. Faculty Support (FS) also had a meaningful effect on motivation (H5: $\beta = 0.079$, $T = 2.174$, $P = 0.030$), indicating that academic mentorship and encouragement from faculty members contribute positively to students' motivational orientation.

The most substantial direct effect on Motivation was observed for Peer Collaboration (PC) in Hypothesis H7 ($\beta = 0.604$, $T = 12.933$, $P < 0.001$), which implies that collaborative learning, shared responsibilities, and mutual support among peers have a profound impact on enhancing student motivation in community engagement settings. This aligns with social constructivist views of learning, where peer interaction facilitates deeper engagement and persistence.

Hypothesis H6, examining the direct impact of Motivation on Skill Enhancement (SE), revealed a strong and significant path ($\beta = 0.471$, $T = 11.321$, $P < 0.001$). This confirms that students who are intrinsically motivated to participate in meaningful academic and community work are more likely to report improvements in communication, leadership, critical thinking, and problem-solving skills.

The model also tested the mediating role of motivation in the relationship between engagement practices and skill enhancement. H8, which assessed the indirect path from Behavioural Engagement to Skill Enhancement via Motivation, showed a significant mediation effect ($\beta = 0.070$, $T = 2.733$, $P = 0.006$). This suggests that students' observable participation behaviors contribute to skill development primarily through their motivational influence.

H9 tested the mediation effect for Cognitive Engagement, yielding a smaller but significant indirect effect ($\beta = 0.029$, $T = 1.096$, $P = 0.003$), indicating that mental investment and critical thinking promote skill enhancement indirectly by fostering motivation. Similarly, H10 for Emotional Engagement showed a very weak but statistically significant mediation effect ($\beta = 0.005$, $T = 0.152$, $P = 0.001$), reinforcing the idea that while emotional factors play a supporting role, they are not the primary drivers of skill development.

The mediation effect for Experiential Learning was substantial and statistically significant (H11: $\beta = 0.152$, $T = 5.255$, $P < 0.001$), highlighting that real-world, applied learning experiences enhance motivation, which in turn significantly boosts students' skill acquisition. Faculty Support also demonstrated a notable mediation effect (H12: $\beta = 0.037$, $T = 2.143$, $P = 0.032$), emphasizing the role of instructors not just in delivering content but in shaping students' engagement mindset.

Finally, H13 confirmed the strongest mediation pathway from Peer Collaboration to Skill Enhancement via Motivation ($\beta = 0.285$, $T = 9.514$, $P < 0.001$). This underscores the critical role of social and collaborative learning environments in empowering students and fostering the development of professional and interpersonal skills through increased motivation.

5. CONCLUSION

This study provides empirical validation of a multidimensional framework linking student engagement practices, motivation, and skill enhancement within community-centric higher education environments. Drawing on Self-Determination Theory and Experiential Learning Theory, the findings demonstrate that behavioural, cognitive, emotional, and experiential forms of engagement—supplemented by faculty support and peer collaboration—significantly predict students' motivational levels, which in turn drive the development of essential academic and employability skills. Notably, experiential learning and peer collaboration emerged as the most salient predictors, underscoring the pedagogical value of active, real-world, and socially embedded learning experiences. These results reaffirm the importance of shifting from traditional didactic instruction toward more participatory, reflective, and community-integrated education practices.

5.1. Theoretical and Practical Implication

This research contributes to the growing body of literature that repositions student engagement as a multidimensional construct with both direct and indirect effects on learner outcomes (Chen et al., 2024). Theoretically, it offers an integrated model that bridges motivational psychology with experiential pedagogy, thereby advancing our understanding of how higher education can more effectively contribute to skill formation in socially meaningful contexts (Goussain et al., 2025). The inclusion of motivation as a mediating variable adds explanatory power to prior models of student development, emphasizing its central role in translating engagement into tangible learning outcomes.

From a practical perspective, the findings have significant implications for educators, institutional leaders, and policymakers. Institutions should actively design curricula that embed community-based projects, fieldwork, and collaborative learning into academic programs. Faculty development initiatives must focus on equipping instructors with the tools to facilitate experiential and socially relevant learning environments. Moreover, institutional policies should prioritize partnerships with local communities to foster reciprocal learning and civic engagement. Such measures are not only instrumental in enhancing student learning but also align higher education more closely with societal transformation goals.

5.2. Future Research and Limitation

While this study offers significant contributions to the understanding of student engagement, motivation, and skill enhancement within community-centric higher education, several limitations warrant consideration. First, the research was geographically confined to select urban centres in Uttar Pradesh, which may limit the generalizability of the findings to broader national or international contexts. Future studies should seek to incorporate more diverse samples, including students from rural areas, tribal communities, and a wider range of institutional types to capture contextual variations more comprehensively.

Second, the study relied exclusively on self-reported data, which can be susceptible to social desirability bias and common method variance. Triangulating survey responses with observational data, faculty assessments, or peer evaluations could enhance the validity of future research. Third, the cross-sectional design limits causal inference; longitudinal research would be valuable in assessing how engagement practices and motivation evolve over time and contribute to sustained skill development throughout students' academic journeys.

Additionally, while the current model identified motivation as a mediating variable, future studies could explore other psychological or contextual mediators and moderators—such as institutional support structures, digital engagement platforms, or socioeconomic background—to better understand the mechanisms shaping skill acquisition. Employing mixed-methods designs, including qualitative interviews or ethnographic case studies, could also yield deeper insights into the lived experiences of students navigating community-based learning environments.

By addressing these limitations and expanding the theoretical scope, future research can offer a more nuanced and comprehensive understanding of how community-engaged educational models contribute to the holistic development of students in higher education.

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