BEHAVIORAL PREDICTORS OF BLENDED LEARNING ENGAGEMENT AND STUDENTS' PERCEIVED SOCIAL PURPOSE IN AUTOMOTIVE TECHNOLOGY EDUCATION

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Abstract

The shift to blended learning has highlighted the importance of understanding the factors that influence student engagement, particularly in technical-vocational disciplines. Guided by the Theory of Planned Behavior (TPB), this study examined the predictors of blended learning engagement and explored the perceived social purpose of Automotive Technology students at North Eastern Mindanao State University–Cantilan Campus. Employing an explanatory sequential mixed methods design, quantitative data were collected through a validated and reliable structured questionnaire assessing five TPB constructs: Attitude, Subjective Norms, Perceived Behavioral Control (PBC), Intention, and Actual Engagement. Qualitative data were subsequently gathered through interviews with selected students to explore the societal significance they attach to their acquired competencies. Descriptive analysis revealed generally positive perceptions of blended learning, with students demonstrating favorable attitudes, strong social influences, and high levels of perceived behavioral control. Multiple linear regression analysis showed that Attitude, Subjective Norms, and PBC significantly influenced students' intention to engage in blended learning, while simple linear regression confirmed that Intention was a strong predictor of Actual Engagement. The qualitative findings revealed five themes reflecting students' perceived social purpose: Supporting Community Mobility and Daily Transportation Needs, Promoting Public Safety Through Technical Competence, Contributing to Local Economic Productivity, Enabling Service to Underserved and Remote Communities, and Creating Opportunities for Self and Others. These findings suggest that students view automotive education not only as preparation for employment but also as a means of contributing to the well-being and development of society. The study extends the application of TPB by demonstrating that engagement in blended learning is associated not only with behavioral intentions but also with students' broader perceptions of societal contribution. Educational institutions should therefore foster both meaningful engagement and a strong sense of social purpose among future technical-vocational professionals.

Keywords: *Blended learning, Student engagement, Theory of Planned Behavior, Automotive Education, behavioral predictors, Higher education*

Introduction:

Blended learning, as a transformative educational approach, integrates traditional face-to-face instruction with online components to foster flexible, student-centered experiences that promote computer-assisted, constructive, and collaborative learning (Bashir et al., 2023). In the context of Technical and Vocational Education and Training (TVET), the integration of digital pedagogies has gained momentum, offering enhanced flexibility and personalized learning opportunities (Chen & Chan, 2024). In the Philippine tertiary education context, Chavez and Ceneciro (2021) found that learning management systems are widely utilized for course administration, content dissemination, and submission of academic requirements, highlighting the growing role of digital platforms in supporting flexible and technology-enhanced learning environments. However, challenges remain, including disparities in technological resources and the need to strengthen digital literacy among educators (Chen & Chan, 2024; Holler et al., 2023). Although TVET lecturers generally rate their digital competencies positively, many still require additional support in planning and delivering effective technology-enhanced lessons (Holler et al., 2023). As higher education institutions continue to adopt blended learning modalities, it becomes increasingly important to examine the behavioral determinants that influence students' willingness and capacity to engage in such environments, particularly within skills-based programs.

The Theory of Planned Behavior (TPB) (Ajzen, 1991) provides a robust framework for predicting and explaining human behavior across various domains, including education. According to TPB, an individual's intention to perform a behavior is shaped by three core constructs: attitude toward the behavior, subjective norms or perceived social pressure, and perceived behavioral control (PBC)—the individual's perceived ease or difficulty in performing the behavior. In the context of education, TPB has been extensively utilized to forecast students' intentions and participation in online and blended learning environments. Empirical studies support the model's validity, consistently showing that attitude, subjective norms, and PBC significantly predict students' willingness to adopt blended learning approaches (Bokolo et al., 2020). However, there remains a paucity of research specifically focusing on automotive technology students, whose learning requires integration of both cognitive and psychomotor domains. This dual demand renders their engagement in blended learning both intricate and distinct, warranting a closer examination of how TPB constructs operate within this population.

Understanding the behavioral predictors of blended learning engagement is particularly critical for technical education programs, where a balance between digital content and hands-on training is essential for developing competence. While previous studies have highlighted general trends in the adoption of blended learning (Dang, 2020) there remains a significant gap in empirical evidence regarding how technical students, such as those in automotive technology, perceive and engage with blended learning opportunities. Perception differences have been observed across demographic groups, underscoring the importance of tailoring interventions that promote not only digital engagement but also preserve the integrity of skill-based instruction. Gaining insights into these perception differences is crucial for designing effective interventions that foster engagement while ensuring the continued relevance and quality of hands-on learning experiences.

Beyond engagement and technology adoption, contemporary vocational education literature emphasizes the importance of helping learners develop a sense of purpose and understanding of how their acquired competencies contribute to society. Studies conducted in vocational and technical education

settings have shown that students often associate their professional preparation with broader social and economic contributions. Research has demonstrated that social support, vocational identity, and career self-efficacy influence students' commitment to their chosen professions and strengthen their perception of future societal roles (Suyitno, 2024). Similarly, vocational learners have been found to develop stronger professional identities when they recognize the relevance of their skills to social and economic development (Wang, 2025). Workplace immersion and industrial training experiences further reinforce this perspective by enabling students to connect technical competence with community needs, professional responsibilities, and productive participation in society (Anwar et al., 2023; Ruslin, 2017). Moreover, vocational education has been shown to cultivate a sense of professional purpose, social responsibility, and commitment to the common good through the development of pre-professional identity, work-integrated learning experiences, and values associated with craftsmanship and service (Sánchez-Vera et al., 2021; Trede, 2012; Dehing et al., 2013; Li, 2020).

Within the Philippine context, technical-vocational education has likewise been recognized as a catalyst for individual advancement and societal development. Existing studies have consistently highlighted the role of TVET in improving employment outcomes, workforce participation, productivity, and community development (Generalao et al., 2025; Tadeo et al., 2025; Philippine Institute for Development Studies, 2025). Beyond employability, scholars have emphasized the capacity of technical education to promote social inclusion, human development, community empowerment, and sustainable development, particularly among marginalized and underserved populations (Aquino et al., 2023; Gangoso, 2023; Abing, 2025). Furthermore, vocational education has been associated with transformative effects on families and communities, enabling graduates to become agents of social and economic change through the application of their acquired skills (Narsico, 2024; Navarez & Tabernilla, 2024). Despite these contributions, limited research has examined how automotive technology students themselves perceive the broader social purpose of their education and future profession. In response, this study introduces the construct of Perceived Social Purpose, which refers to students' beliefs that the knowledge, skills, and competencies acquired through automotive education can contribute positively to individuals, communities, industries, and society. Exploring this dimension provides a deeper understanding not only of why students engage in blended learning but also of the societal meaning they attach to their educational experiences and future professional roles.

This study seeks to fill this gap by employing the Theory of Planned Behavior to investigate the predictors of blended learning engagement among automotive technology students in a higher education institution in the Philippines. Specifically, the study answers the following research questions:

1. What are the levels of Attitude, Subjective Norms, and Perceived Behavioral Control of automotive technology students toward blended learning?
2. To what extent do Attitude, Subjective Norms, and Perceived Behavioral Control significantly influence students' Intention to engage in blended learning?
3. Does Intention significantly predict students' actual engagement in blended learning?
4. How do automotive technology students perceive the social purpose of their acquired knowledge, skills, and competencies as future automotive professionals?

This study provides a comprehensive understanding of blended learning engagement among automotive technology students by examining both its behavioral predictors and its contribution to students' perceived social purpose. The findings contribute to the growing literature on digital pedagogy,

learner behavior, and vocational education while offering valuable insights for educators and policymakers in designing learning environments that foster active engagement, professional growth, and a stronger sense of societal contribution among future automotive professionals.

Methodology:
Research Design

This study employed an explanatory sequential mixed methods research design to investigate the behavioral predictors of blended learning engagement and explore the perceived social purpose of automotive technology students. Grounded in the Theory of Planned Behavior (TPB) (Ajzen, 1991), the quantitative phase examined the relationships among Attitude, Subjective Norms, and Perceived Behavioral Control (PBC) as predictors of Intention, and subsequently, the influence of Intention on Actual Engagement in blended learning. The qualitative phase followed to provide deeper insights into how students perceive the broader societal significance of their acquired knowledge, skills, and competencies as future automotive professionals. This design was selected because it allows quantitative findings to be complemented and enriched by qualitative data, thereby providing a more comprehensive understanding of both the behavioral and social dimensions of blended learning engagement.

Population and Sample

The target population consisted of all automotive technology students (N = 642) enrolled at North Eastern Mindanao State University – Cantilan Campus during the academic year 2024–2025. Using a convenience sampling technique, a total of 380 students voluntarily participated in the quantitative phase of the study, yielding a participation rate of approximately 59.2%. This sample size exceeds the minimum requirement for multiple regression analysis with three predictors at a power level of 0.80 and $\alpha = 0.05$ (Cohen, 1992), ensuring adequate statistical validity. Respondents represented various year levels, providing a diverse perspective on blended learning experiences.

For the qualitative phase, fifteen (15) students were purposively selected from the quantitative participants to provide deeper insights into the perceived social purpose of their learning experiences. Criterion-based purposive sampling was employed to identify participants who could provide rich and relevant information regarding the phenomenon under investigation. To be included in the qualitative phase, participants had to: (1) be officially enrolled in the Automotive Technology program during the study period; (2) have completed the quantitative survey; (3) have participated in blended learning activities for at least one academic semester; and (4) demonstrate willingness to participate in an interview. The selected participants represented varying levels of engagement in blended learning to ensure diverse perspectives and experiences were captured.

Validity and Reliability of the Instrument

To ensure content and construct validity, the questionnaire underwent expert review by three specialists in educational research, educational psychology, and instructional technology. Their feedback guided revisions in item phrasing, scale alignment, and construct representation. A pilot test was then conducted with 50 automotive students from a comparable institution, who were not part of the final study sample. Reliability testing of the pilot data using Cronbach's alpha yielded values ranging from 0.83 to 0.89 across the five constructs, confirming high internal consistency. These metrics established the instrument's suitability for measuring the behavioral constructs and ensured methodological rigor consistent with social science research standards.

Data Collection Procedure

Upon securing ethical clearance from the university's Institutional Review Board, formal coordination was established with program heads and instructors for the administration of the instrument. Students were invited to participate voluntarily and informed of the study's purpose, confidentiality procedures, and their right to withdraw at any point without consequence. Informed consent was obtained prior to participation. The questionnaires were administered both in printed form and via a secured online platform to maximize accessibility.

Data Analysis Techniques

To address the research questions, Mean and Standard Deviation were used to determine the levels of Attitude, Subjective Norms, and Perceived Behavioral Control of automotive technology students toward blended learning. Multiple linear regression analysis was employed to examine the predictive influence of Attitude, Subjective Norms, and Perceived Behavioral Control (PBC) on students' Intention to engage in blended learning. Simple linear regression analysis was conducted to determine the extent to which Intention predicted students' Actual Engagement in blended learning activities.

For the qualitative phase, thematic analysis was utilized to analyze the interview data regarding students' perceived social purpose. Interview transcripts were carefully reviewed, coded, and organized into meaningful categories. Similar codes were grouped to identify recurring patterns and themes that reflected how students perceived the societal significance of their acquired knowledge, skills, and competencies as future automotive professionals. The identified themes were subsequently interpreted and integrated with the quantitative findings to provide a more comprehensive understanding of both the behavioral and social dimensions of blended learning engagement.

Results and Discussion

Table 1. Descriptive Statistics for Attitude, Subjective Norms, Perceived Behavioral Control, Intention, and Actual Engagement in Blended Learning

Index	Attitude	Subjective Norms	PBC	Intention	Behavior
count	380.0	380.0	380.0	380.0	380.0
mean	4.116	4.082	4.066	4.12	4.089
std	0.787	0.826	0.849	0.809	0.827

To address the first research question, descriptive statistics were computed to determine the levels of attitude, subjective norms, and perceived behavioral control (PBC) among students in relation to their engagement with blended learning. The results presented in Table 1 show consistently high mean scores across all indicators on a five-point Likert scale, indicating generally positive perceptions of and engagement in blended learning. Specifically, students demonstrated a high level of attitude (M = 4.116, SD = 0.787), suggesting that they perceive blended learning to be effective, flexible, and conducive to their learning preferences. Subjective norms also yielded a strong mean score (M = 4.082, SD = 0.826), implying that students feel a notable degree of social encouragement from peers, instructors, and family members. Similarly, perceived behavioral control was high (M = 4.066, SD = 0.849), indicating that students feel confident in their ability to navigate the technical and self-regulatory demands of blended learning.

These positive perceptions are further reflected in students' intention to engage (M = 4.120, SD = 0.809) and actual engagement (M = 4.089, SD = 0.827), demonstrating alignment between intention and behavior, a core postulate of the Theory of Planned Behavior (Ajzen, 1991). The relatively low standard deviations across variables indicate consistency in responses, reinforcing the reliability of the students' attitudes toward blended learning. Research consistently supports the influence of positive attitudes, supportive social norms, and high perceived control on technology acceptance in educational contexts. Lee et al. (2010) found that attitude, subjective norm, and perceived behavioral control significantly predicted teachers' intentions to use computers for lesson creation and delivery. Similarly, Teo (2010) extended the Technology Acceptance Model to include subjective norm, facilitating conditions, and technological complexity as determinants of pre-service teachers' attitudes toward computer use.

The findings have several important implications for the implementation of blended learning in higher education. First, the positive attitude toward blended learning suggests that institutions should continue to expand these modalities, particularly in the post-pandemic educational landscape. Students' favorable views highlight the value of blended learning, making it essential for institutions to design curricula that leverage this receptivity.

Second, the high perceived social influence underscores the need for a supportive learning culture. Faculty, peers, and institutional leaders play key roles in encouraging student engagement. Promoting structured peer collaboration and faculty mentorship can further enhance participation in blended learning. Third, students' strong perceived behavioral control indicates their digital readiness and adaptability, emphasizing the importance of maintaining sufficient technological infrastructure and digital literacy initiatives to empower students in blended learning environments.

Finally, the alignment between intention and behavior validates the predictive power of the Theory of Planned Behavior. When students value blended learning, feel socially encouraged, and are confident in their abilities, they are more likely to engage actively. Overall, the study provides valuable insights for institutions aiming to foster effective, inclusive, and sustainable blended learning environments by integrating these key predictors—attitude, subjective norms, perceived behavioral control, and intention—into their strategies

Table 2. Multiple Linear Regression Results Predicting Students' Intention to Engage in Blended Learning

Variable	Coefficient (β)	Standard Error	t-value	p-value	[0.025	0.975]
constant	0.324227	0.096926	3.345106	0.000905	0.133642	0.514811
Attitude	0.199751	0.048066	4.155795	$4e^{-05}$	0.10524	0.294262
Subjective Norms	0.357744	0.051162	6.992326	0.001	0.257144	0.458344
PBC	0.372077	0.042473	8.760412	0.001	0.288564	0.455591

Note: β = regression coefficient; Standard Error = variability of estimate; t = test statistic; p = significance level; 95% CI = confidence interval for β.

To examine the extent to which attitude, subjective norms, and perceived behavioral control (PBC) influence students' intention to engage in blended learning, a multiple linear regression analysis using the Ordinary Least Squares (OLS) method was performed. As shown in Table 2, the overall model is

statistically significant, with each of the three independent variables emerging as significant predictors of behavioral intention.

The regression model indicates that perceived behavioral control ($\beta = 0.372$, $p < 0.001$) has the strongest influence on students' intention to participate in blended learning, followed by subjective norms ($\beta = 0.358$, $p < 0.001$), and attitude ($\beta = 0.200$, $p < 0.001$). The significance levels (all $p < 0.001$) and narrow 95% confidence intervals (which do not cross zero) for each coefficient confirm that the predictors have meaningful and statistically robust effects. These findings affirm the theoretical propositions of the Theory of Planned Behavior (TPB) (Ajzen, 1991), which posits that behavioral intention is jointly determined by an individual's positive evaluation of the behavior (attitude), perceived social pressure (subjective norms), and perceived ease or difficulty of performing the behavior (PBC).

The implication of this result is substantial for the design and implementation of blended learning frameworks in higher education. First, the dominance of perceived behavioral control in predicting intention highlights the critical role of self-efficacy and resource accessibility. When students perceive themselves as capable of managing the technological and cognitive demands of blended learning, they are more likely to form strong intentions to engage. This supports the findings of Al-Harbi (2011) found PBC to be the most significant factor influencing students' intention to adopt e-learning in Saudi Arabia. Similarly, Nayanajith & Damunupola (2021) confirmed a positive relationship between PBC and e-learning adoption in Sri Lankan international schools. Altawalbeh & Al-Mughrabi (2024) also demonstrated PBC's significant influence on behavioral intention towards e-learning in Jordanian higher education.

Second, the strong predictive power of subjective norms highlights the critical role of social influences in the acceptance and adoption of blended learning. The impact of peers, instructors, and family members on students' behavioral intentions aligns with Shuter et al.'s (2017) assertion that cultural values—particularly those related to respect for authority—significantly shape educational behaviors. Similarly, Schraube, & Marvakis, (2016) emphasized that the integration of digital technologies into students' everyday lives has transformed social practices, extending learning interactions beyond traditional classroom boundaries. These findings suggest that higher education institutions must foster an academic culture that visibly endorses blended learning. This can be achieved by positioning faculty as digital learning advocates, facilitating peer collaboration, and sharing success narratives to build normative support and reinforce positive perceptions of blended modalities.

Third, while attitude emerged as the least strong among the three predictors, its statistically significant effect underscores its continuing relevance in shaping students' engagement with blended modalities. Students' favorable beliefs about the flexibility, interactivity, and overall effectiveness of blended learning contribute meaningfully to their behavioral intentions. Existing literature supports this finding: Chen and Yang (2014) identified robust positive attitudes toward technology-enhanced intercultural language learning, and McPhail and Birch (2004) reported that over 80% of students responded favorably to the use of TEL resources. These positive dispositions are closely linked to increased student engagement and improved academic outcomes. Lee and Choi (2017) further emphasized that attitude plays a vital role in learners' decision-making processes in online learning environments.

Thus, the findings affirm the core assumptions of the Theory of Planned Behavior (TPB), suggesting that while attitude, subjective norms, and perceived behavioral control each contribute to the formation of behavioral intention, fostering a supportive social environment and empowering learners

through greater perceived control are especially vital strategies for promoting meaningful engagement in blended learning contexts.

Table 3. Simple Linear Regression Results Predicting Students' Actual Engagement from Their Intention Predictive Influence of Intention on Actual Engagement in Blended Learning

Variable	Coefficient	Standard Error	t	P-value|	[0.025	0.975]
constant	0.391452	0.105674	3.704349	0.000244	0.18367	0.599234
Intention	0.897645	0.025171	35.661341	0.001	0.848151	0.947138

To determine whether intention significantly predicts students' actual engagement in blended learning, a simple linear regression analysis was conducted. As presented in Table 3, the results indicate that intention is a strong and statistically significant predictor of actual behavior. Specifically, the regression coefficient for intention is $\beta = 0.898$ ($p < 0.001$), which implies that for every one-unit increase in intention, there is nearly a corresponding one-unit increase in actual blended learning engagement. This robust relationship is further supported by a very high R-squared value of 0.7714, indicating that intention alone explains 77.14% of the variance in students' actual engagement. These findings reflect a substantial alignment between students' motivational disposition and their observable learning behaviors.

This result reinforces the central premise of the Theory of Planned Behavior (TPB) (Ajzen, 1991), which posits that behavioral intention is the most immediate determinant of actual behavior. In the context of blended learning, when students possess strong intentions—shaped by positive attitudes, supportive social norms, and a sense of control over their learning—they are more likely to translate those intentions into active engagement. This outcome aligns with a growing body of empirical literature emphasizing the predictive strength of intention in e-learning and m-learning contexts. For instance, intention to use has consistently emerged as a strong predictor of actual system use, influenced by factors such as perceived ease of use, perceived usefulness, and user satisfaction (Mohammadi, 2015; Al-Maroof et al., 2020).

Moreover, system quality and information quality are significant contributors to both user satisfaction and behavioral intention (Mohammadi, 2015). In blended learning environments, subjective norms and perceived image further enhance intention formation. Collectively, these findings affirm the validity of TPB in explaining students' engagement in technology-enhanced education and underscore the importance of fostering favorable perceptions, social support, and digital readiness to sustain blended learning practices.

The findings carry substantial implications for educational practice, particularly in enhancing student engagement within blended learning environments. The strong linkage between intention and actual behavior underscores the importance of fostering intention as a strategic lever to drive engagement. Educational interventions that strengthen students' motivation—such as peer modeling, value-driven goal setting, and fostering learner agency—can significantly improve behavioral outcomes. Consequently, institutional efforts must go beyond providing technological infrastructure and access; they must also cultivate both intrinsic and extrinsic motivational factors that reinforce students' readiness and willingness to participate in digitally mediated learning.

Furthermore, the predictive strength of intention may reflect a higher level of self-regulation and goal orientation among learners. This observation resonates with Zimmerman's (2002) Self-Regulated

Learning Theory, which highlights the critical role of intentional planning and self-directed behavior in achieving academic success. By aligning blended learning strategies with students' articulated intentions, institutions can optimize instructional design and ensure a more meaningful connection between pedagogical goals and learner behavior. Ultimately, the strong intention-behavior correlation affirms the validity and practical relevance of the Theory of Planned Behavior in the blended learning context. It emphasizes the necessity of fostering robust motivational foundations that enable students to translate educational intentions into sustained, effective engagement.

Qualitative Question: *How do automotive technology students perceive the social purpose of their acquired knowledge, skills, and competencies as future automotive professionals?*

To answer Research Question 4, which explored how automotive technology students perceive the social purpose of their acquired knowledge, skills, and competencies, thematic analysis was conducted, yielding five major themes: *(1) Supporting Community Mobility and Daily Transportation Needs, (2) Promoting Public Safety Through Technical Competence, (3) Contributing to Local Economic Productivity, (4) Enabling Service to Underserved and Remote Communities, and (5) Creating Opportunities for Self and Others.*

Theme 1: Supporting Community Mobility and Daily Transportation Needs

Among the fifteen participants interviewed, thirteen students expressed that the knowledge and skills they acquired in Automotive Technology would enable them to contribute to society by ensuring the safety, reliability, and accessibility of transportation within their communities. Participants recognized that vehicles play a crucial role in people's daily lives, serving as a means of transportation for work, education, business, and emergency situations. They viewed their future profession not merely as repairing vehicles but as helping individuals and communities maintain mobility and productivity. This perception reflects a growing awareness that automotive professionals provide essential services that directly affect the quality of life of community members. Through their educational experiences, students developed an understanding that technical competence in vehicle maintenance and repair can generate meaningful social benefits by minimizing transportation disruptions and promoting safer travel.

"…our job is not just about fixing vehicles. When a person's vehicle is working properly, they can go to work, earn a living, and support their family. In a way, we are helping people continue their daily lives." (P7)

"Transportation is something that almost everyone depends on. Even a simple repair can make a big difference because it helps people get where they need to be safely and on time." (P1)

The findings suggest that students perceive automotive competencies as a means of supporting community mobility and ensuring the continuity of daily economic and social activities through reliable transportation services.

Theme 2: Promoting Public Safety Through Technical Competence

Eleven of the fifteen participants highlighted that their future role as automotive professionals extends beyond vehicle maintenance and includes contributing to public safety. Students emphasized that properly functioning vehicles reduce the likelihood of mechanical failures, road accidents, and transportation-related hazards. They recognized that the quality of their work can directly influence the safety of drivers, passengers, and pedestrians. For many participants, learning automotive technology instilled a sense of responsibility, as they understood that negligence or poor workmanship could have

serious consequences for others. This awareness fostered a perception that their technical expertise serves a broader social function by helping ensure safer roads and more reliable transportation systems.

"I think one of the biggest contributions we can make is preventing accidents. If we do our job correctly and make sure vehicles are safe to use, we are also helping protect people's lives." (P12)

"Sometimes people only see mechanics as people who repair cars, but for me, we also have a responsibility to make sure that vehicles are safe before they go back on the road." (P4)

The stories indicate that students associate their automotive competencies with promoting public safety and view technical proficiency as a means of protecting the well-being of road users and the wider community.

Theme 3: Contributing to Local Economic Productivity

Nine of the fifteen participants described their future profession as a means of supporting economic activity within their communities. Students acknowledged that transportation plays a vital role in commerce, employment, and the delivery of goods and services. They believed that maintaining and repairing vehicles enables businesses, workers, and entrepreneurs to operate efficiently, thereby contributing to local economic stability. Several participants also noted that automotive services are essential to sustaining the livelihoods of individuals who depend on transportation-related occupations. Through their training, students began to appreciate the interconnectedness between technical work and broader economic development, recognizing that their expertise could have far-reaching effects beyond the workshop.

"When delivery vehicles, public transportation, or service vehicles break down, it affects many people. If we can help keep those vehicles running, we are also helping businesses and workers do their jobs." (P9)

"I see automotive work as something that supports the economy in a simple way. A properly maintained vehicle helps people earn income, run businesses, and provide for their families." (P14)

Students view their automotive knowledge and skills as valuable resources that contribute to economic productivity and support the functioning of local industries and livelihoods.

Theme 4: Enabling Service to Underserved and Remote Communities

Among the fifteen participants interviewed, nine students emphasized that their automotive knowledge and skills could be used to support individuals living in underserved and geographically isolated communities. Participants recognized that reliable transportation is often limited in rural areas, making vehicle maintenance and repair essential for access to education, healthcare, employment, and other basic services. Several students expressed a desire to use their future profession to assist communities where access to qualified automotive technicians is scarce. Their responses reflected an awareness that technical expertise can play a meaningful role in addressing practical challenges faced by underserved populations and improving community accessibility.

"I come from an area where not everyone has access to automotive services. Sometimes people have to spend extra money or travel long distances just to get their vehicles repaired. …I feel that I can eventually help people in communities like ours by providing services that are more accessible and affordable." (P6)

"Many people depend on vehicles for work, school, and everyday responsibilities, especially in places where transportation options are limited. I think that having automotive skills gives me an opportunity to help communities

continue their daily activities. Even something as simple as repairing a vehicle can make a difference because it helps people get to where they need to be." (P15)

Many participants perceived their future profession as an opportunity to extend essential technical services to communities that may otherwise have limited access to automotive expertise and transportation support.

Theme 5: Creating Opportunities for Self and Others

Out of fifteen participants, Eight students perceived their automotive education as a pathway not only toward personal advancement but also toward creating opportunities for other people. Participants shared aspirations of establishing their own automotive businesses, generating employment, mentoring future technicians, and supporting the financial stability of their families. For these students, the social purpose of acquiring automotive competencies extended beyond securing a job; it involved using their skills and future success to help others improve their circumstances. Their responses reflected a practical understanding of how technical expertise can create ripple effects that benefit families, aspiring workers, and local communities. Students recognized that success in their chosen field could enable them to contribute to the livelihood and development of others through entrepreneurship, mentorship, and workforce participation.

"One of my goals is to open my own automotive shop someday. If that happens, I would not only be earning for myself but also creating jobs for other people who need work. I think that is one way I can give back to the community through the skills I am learning." (P8)

"I want to become successful in this field so that I can help my family and eventually train or guide younger people who are interested in automotive work. If I can share what I know and help someone build a career, that would be meaningful for me." (P11)

Many participants viewed automotive education as a means of creating opportunities that extend beyond personal gain, allowing them to support the growth and development of others through employment, mentorship, and entrepreneurship.

Conclusion

This study aimed to examine the psychological determinants of students' engagement in blended learning using the Theory of Planned Behavior (TPB) as a guiding framework. The results provide compelling evidence that students hold highly positive attitudes, perceive strong social support, and report substantial control over their ability to engage in blended learning modalities. These components—attitude, subjective norms, and perceived behavioral control—each demonstrated significant positive effects on students' intention to participate, confirming the predictive utility of the TPB in educational technology contexts. Moreover, intention was found to be a powerful predictor of actual engagement, explaining over 77% of the variance in behavioral participation. This underscores the notion that when students are psychologically committed to engaging in blended learning—fueled by internal motivation, social reinforcement, and self-efficacy—this intention is highly likely to manifest in concrete actions. The

strength of the intention-behavior link highlights the importance of cultivating positive beliefs and supportive learning environments to enhance student participation in hybrid educational formats.

These findings advance our understanding of the cognitive and motivational mechanisms underlying student behavior in technologically integrated learning environments. They also offer practical insights for educators, administrators, and policymakers: strategies that enhance students' attitudes, leverage peer and instructor support, and build learners' confidence in navigating digital tools can effectively increase both intention and actual participation in blended learning.

Beyond the behavioral predictors of engagement, the qualitative findings revealed that students attach meaningful social purpose to their automotive education. Participants perceived their acquired competencies as a means of supporting community mobility, promoting public safety, contributing to local economic productivity, extending technical services to underserved communities, and creating opportunities for themselves and others. These themes suggest that students view automotive education not merely as preparation for employment but as a pathway toward meaningful societal contribution

Ultimately, the results affirm the robustness of the Theory of Planned Behavior as a framework for understanding students' engagement in blended learning while also highlighting the broader social significance that students attach to their educational experiences. The findings demonstrate that fostering positive attitudes, supportive social influences, and strong perceived control can enhance engagement in blended learning environments. More importantly, they reveal that automotive technology students perceive their acquired competencies as meaningful tools for supporting community mobility, promoting public safety, contributing to economic productivity, extending services to underserved communities, and creating opportunities for themselves and others. These insights underscore the value of technical-vocational education not only as a pathway to workforce preparation but also as a means of cultivating socially conscious and purpose-driven professionals capable of contributing meaningfully to their communities and society.

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