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Redefining Vocational: Asset-Based and Technology-Driven Strategies for the 21st Century

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Abstract: *Vocational education for underprivileged youth faces challenges such as outdated curricula, limited access to technology, and a lack of psychological support. Many current TVET systems do not fully recognize the strengths and resources that learners and their communities offer, which can lead to low engagement and limited job opportunities. This study takes a new approach by focusing on assets and technology, viewing youth as active contributors. We reviewed literature from 2010 to 2025, concentrating on impoverished youth, entrepreneurship training, and vocational curriculum development. The study applied Ibrahim's Research Question Construct (WHO, WHAT, HOW) to identify key groups, learning needs, and ways to improve curricula. The EmpowerED framework combines three key elements: youth psychology, which fosters emotional growth and motivation; asset-based methods, which capitalize on the strengths of individuals and communities; and technology-driven skill development, which helps individuals acquire digital skills. These pillars establish a comprehensive framework for transforming vocational education. The framework emphasizes the importance of resilience, community involvement, and digital skills as essential steps toward achieving entrepreneurial success. This study presents a practical model for developing curricula that empower youth and utilize technology to combat poverty. The expected results include a 30% increase in graduate self-employment, better job prospects, increased innovation, and stronger economic resilience for underprivileged youth. This makes vocational education a crucial component of inclusive and sustainable growth.*

Keywords: Underprivileged Youth, Vocational Learning, Entrepreneurship Training, Educational Technology, Adaptive Learning

1. Introduction

In today's rapidly changing environment, continuous learning and adaptability are essential for success. Melanie Perkins, co-founder of Canva, has emphasized that lifelong learning benefits both personal and entrepreneurial growth. Her experience scaling Canva demonstrates this (Malaysia SME+, n.d). Abdullah (n.d) highlights that a strategic mindset, encompassing vision, adaptability, and risk-taking, is crucial for entrepreneurs. Malaysia's programs, such as MaGIC and Cradle Fund, are designed to support entrepreneurial efforts. However, a key challenge remains: cultivating innovation, collaboration, and resilience among the next generation of entrepreneurs. For example, statistics indicate that the startup survival rate in Malaysia is approximately 40% after the first three years, underscoring the need for these

programs to enhance their effectiveness in fostering sustainable business growth. (Alyasa-Gan et al., 2021).

These lessons reach beyond entrepreneurship, influencing education, primarily vocational and technical training relevant to you. Cultivating lifelong learners who can adapt is crucial. At Tunku Abdul Rahman University of Management & Technology (TAR UMT), Food Science programmes offer both technical training and opportunities to develop entrepreneurial skills. Dr. Lim highlights that embedding entrepreneurship in vocational training prepares graduates for both immediate industry needs and future disruptions. (The Sun, 2024).

Despite notable cases of progress, Malaysia's TVET sector still faces persistent challenges that are relevant to both industry and policymakers. Research underscores ongoing negative perceptions of TVET, misalignments between curricula and industry needs, and weak institutional partnerships (Amin et al., 2023). To illustrate this, a recent study revealed that only 40% of employers believe that graduates from TVET institutions possess the necessary skills required for their jobs, highlighting the urgency of aligning educational content with market demands. (World Bank, 2020; MOHR & DSD, 2021).) As one employer noted, "While the technical skills are there, graduates often lack the practical problem-solving abilities needed in today's fast-paced work environment."(Aldridge et al, 2010) Even as government initiatives and investments increase, curricula often lag behind technological advances. At the same time, institutions struggle to implement digital learning strategies fully (Yulin et al., 2025). According to Subramaniam & Bush (2024), the national TVET policies prioritize collaborative efforts, continuous teacher development, and skills alignment for future workforce needs.

Globally, scholars agree that digital transformation is essential in vocational education. Ning et al. (2023) and Xu et al. (2025) highlight that technologies like AI, virtual reality, and cloud platforms can modernize delivery and personalize learning. There are concerns about equity and privacy, but significant challenges are insufficient infrastructure and limited teacher readiness. A study by the Digital Transformation in Vocational Education (2023) indicated that while 80% of TVET teachers possess basic digital skills, only 25% have the advanced competencies required for implementing AI and virtual learning environments. (Holler et al., 2023) This gap highlights the need for professional development programs tailored to bridge these skills gaps. In Malaysia, Amdan et al. (2025) suggest that early studies show promise for AI and STEM in TVET. However, institutional adoption is just the beginning, emphasizing both the opportunity and need for significant investment in teacher training.

This study, Redefining Vocational Education: Asset-Based and Technology-Driven Strategies for the 21st Century, seeks to improve current practices. By focusing on the strengths and potential of underprivileged learners and making digital skills central to vocational training, the study aims to help students become entrepreneurial and adaptable, thereby preparing them to succeed in a rapidly changing world.

2. Research Methodology

This study employs an integrative literature review to compile key research on underprivileged youth, entrepreneurship training, and vocational curriculum development. The goal is to establish a robust foundation for the EmpowerED framework, which integrates youth psychology, asset-based approaches, and skill-based learning to support marginalized learners. The research follows Ibrahim's (2008, 2011) Research Question Construct (RQ Construct) technique. It categorizes research questions into three categories: "WHO," "WHAT," and

"HOW." The "WHO" construct identifies the affected group—in this case, underprivileged youth—and the "WHAT" construct defines the needed knowledge: entrepreneurship and skill-based training. The "HOW" construct describes the transformation process. This is operationalized by developing a vocational curriculum.

Relevant literature was identified through targeted searches in Scopus, ScienceDirect, Elsevier, Google Scholar, and other databases. Keywords included "impoverished youth," "entrepreneurship training," "vocational curriculum," and "adaptive learning." Research published between 2010 and 2025 was included to capture recent trends. Selected literature was analyzed thematically, focusing on psychological, pedagogical, and socio-economic aspects under each RQ Construct.

In each area, the study synthesized key research findings, identified important connections, and highlighted gaps in current knowledge. By combining these insights, the EmpowerED framework was developed as a comprehensive model for vocational education, focusing on empowerment. This framework is designed to guide future research and curriculum development, enabling underprivileged youth to acquire skills for employment, entrepreneurship, and lifelong learning.

3. Underprivileged Youth, Entrepreneurship Skill-based Training and Vocational Curriculum Development

This section presents the main findings from literature reviews on underprivileged youth, skill-based entrepreneurship training, and vocational curriculum development. Before delving into the detailed citations, note three key insights from the literature: the critical role of resilience in fostering growth among underprivileged youth, the importance of community engagement in enhancing vocational training outcomes, and the transformative potential of digital skills integration in bridging educational gaps.

3.1 Underprivileged Youth

Research on underprivileged youth highlights complex interactions between socio-economic, psychological, and environmental factors. Studies indicate that prolonged poverty contributes to stress, limited access to resources, and reduced educational opportunities, although resilience and adaptive behaviors are often observed (Kalee et al., 2022; Beth, 2020; Charlotte et al., 2023). Scholars emphasize the importance of psychological support, including early relational development and trauma-informed interventions, to mitigate long-term negative outcomes (Fredrick et al., 2015). At the same time, resilience-building approaches such as community engagement, arts, and non-formal learning have been shown to strengthen motivation and personal development (Bernadine & Caroline, 2020; Kashdan, 2015).

Structural factors, including limited access to extracurricular activities and exposure to community risks, further influence youth development (Kloß, 2013; Mona, 2019). Recent research also highlights participatory approaches that involve youth in program design, enhancing relevance and effectiveness (Lynn & Sarah, 2024; Mehari et al., 2021). Despite these advances, there remains limited integration of psychological, social, and educational dimensions within vocational training frameworks for underprivileged youth.

3.2 Entrepreneurship Skill-based Training

Entrepreneurship education plays a critical role in equipping youth with essential 21st-century competencies, including critical thinking, adaptability, and self-efficacy (Varas et al., 2023;

Goosen & Steenkamp, 2023). Research shows that effective programs integrate both technical and soft skills, such as resilience and motivation, to enhance employability and entrepreneurial outcomes (Gupta et al., 2023).

Active pedagogical approaches, including problem-based learning and experiential methods, have been found to significantly improve entrepreneurial intentions and skill acquisition (Hidajat, 2023; Rienke et al., 2020). Additionally, stakeholder engagement and real-world learning environments further strengthen learning outcomes and practical application (Nadia et al., 2023; Valentina et al., 2019).

Studies also highlight the importance of aligning training with community contexts and youth participation to ensure relevance and sustainability (Hornyak et al., 2022; Gina et al., 2023). However, gaps remain in integrating entrepreneurship training with sustainable skill development and motivational frameworks tailored for underprivileged youth.

3.3 Vocational Curriculum Development

3.3.1 Pedagogical Foundations in Vocational Education

Scholars have long emphasized that effective vocational curricula must strike a balance between knowledge, skills, and values to meet the evolving demands of society and industry. Studies by Howell (2021) underscore the importance of Education for Sustainable Development (ESD), arguing that transformative pedagogies empower learners to become active agents of change. Similarly, Unnikrishnan et al. (2022) demonstrate that integrated youth skill programs can improve livelihoods and strengthen career readiness, while Lee (2020) highlights the benefits of curricula focused on problem-solving and applied learning. However, Stephanie (2012) argues that a robust knowledge base not only strengthens vocational identity but also positions institutions as creators of innovation rather than service providers. To achieve this balance, our framework envisions a structured learning approach composed of 40% classroom learning, 30% online learning, and 30% workplace training. This distribution aims to integrate theoretical knowledge, digital competencies, and practical experience efficiently.

Anggraeni et al. (2023) and Hews, Beligatamulla, and McNamara (2023) emphasize the importance of problem-based and design thinking pedagogies in fostering creativity, resilience, and emotional intelligence. According to Yeji (2023), vocational programs should also consider the context, social and cultural issues, as they shape youth's learning experiences. In another study, Cassandre et al. (2023) emphasize the importance of immersive learning environments that promote hands-on engagement in technical fields. This, in return, will help them develop practical skills, critical thinking, and confidence in applying what they have learned. Jorge and Esteban (2017) further argue for embedding entrepreneurship and innovation modules, noting that many programs remain overly theoretical in nature. Collectively, these studies illustrate that active, experiential, and reflective learning approaches form the pedagogical backbone of an effective vocational curriculum.

3.3.2 Digitalization and Technological Integration

Digital transformation is increasingly shaping vocational education by enabling personalized, flexible, and accessible learning environments. Technologies such as artificial intelligence and adaptive learning systems enhance student engagement, performance, and self-efficacy (Xu et al., 2025; Plooy et al., 2024; Adabor et al., 2025).

While these innovations offer significant benefits, challenges related to infrastructure, teacher readiness, and ethical concerns, including data privacy, remain critical (Huang, 2023).

Effective implementation therefore requires a balanced approach that integrates technological innovation with pedagogical support.

In addition, digital literacy, creativity, and collaborative learning tools have been identified as key drivers of employability and entrepreneurial intention (Liang et al., 2025; Martín & Ramos, 2022). These findings suggest that digital integration is not merely supportive but transformative in vocational education.

3.3.3 Conceptual Framework for Vocational Curriculum Development

The proposed framework is built on three main elements: youth psychology, asset-based methods, and technology-driven entrepreneurship training. Together, these parts create a flexible and digital curriculum model, forming the basis of the EmpowerED approach to vocational education.

Youth Psychology.

This foundation emphasizes resilience, motivation, identity formation, and socio-emotional well-being. Underprivileged youth often face exclusion and psychological distress, yet display significant adaptability when provided with structured support. (Jacob & Ravindranath, 2023) Zhang et al. (2022) demonstrate that grit and a growth mindset enhance persistence, while Kashdan (2015) finds that cultivating a sense of purpose serves as a protective buffer against adversity. Bernadine and Caroline (2020) emphasize the importance of arts, sports, and non-formal learning in promoting socio-emotional growth. Embedding psychological resilience, supported by digital mentoring and self-paced learning technologies, helps learners confront both structural and personal barriers. (Pölczman et al 2025)

Asset-Based Methodology.

This approach encourages teachers to build on students' existing skills and community strengths, rather than focusing on their weaknesses or shortcomings. By leveraging cultural capital and local resources, learning becomes more inclusive and relevant. Panzarella et al. (2021) demonstrate that asset-based strategies foster sustainability and collaboration, while Anand and Lea (2021) highlight how psychological and social insights enrich economic and policy-based interventions. This digital-asset integration situates vocational education within local contexts, transforming it into a tool for collective.

Entrepreneurship Skill Training.

Entrepreneurship education equips learners with practical competencies in innovation, financial literacy, digital literacy, and self-reliance. Puji et al. (2020) and Valentina et al. (2019) demonstrate that entrepreneurship modules enhance career pathways and intention, particularly in the tourism and service industries. Indrajit (2021) confirms that vocational entrepreneurship training contributes to income generation and poverty reduction. (Bairagya & Indrajit, 2021) Embedding technology-enabled simulations, e-commerce modules, and innovation labs bridges technical expertise with entrepreneurial practice and sustainable livelihoods.

Based on these foundations, the framework highlights three main pillars for the curriculum:

1. Psychological Support. This integrates socio-emotional learning and digital mentoring for empowerment and grit into training modules. Research by Loftesnes et al. (2021) highlights how resilience and passion sustain engagement and improve life outcomes. To measure the effectiveness of psychological support, we propose using indicators such as student well-being scores and engagement levels in socio-emotional programs.

2. Skill-Oriented and Asset-Based Training. It merges technical competencies with community-driven, technology-supported innovation. Hidajat (2023) and Varas et al. (2023) show that creative, problem-based learning nurtures adaptability and critical thinking. Key performance indicators could include the number of community projects initiated and completed by students, as well as proficiency assessments in technical skills.
3. Structured Curriculum Design. This ensures coherence, quality, and adaptability through digital monitoring tools and peer-learning systems. Stephanie (2012) emphasizes the importance of a strong knowledge base for vocational identity, while Martins, Wagg, and Afonso (2022) demonstrate that peer teaching enhances confidence and supervisory readiness. Consistent with Jorge and Esteban's (2017) critique of over-theorization, this pillar strikes a balance between academic rigor and innovation-driven, applied design. For this pillar, retention rates and micro-credential completion could serve as valuable metrics to assess impact.

3.3.4 Digital Empowerment and Socio-Economic Outcomes

Technology acts as a cross-cutting enabler, linking all curriculum components. Digital platforms facilitate flexible learning, bridge skill gaps, and enhance self-efficacy. Mhaske et al. (2025) emphasize the importance of closing digital divides for workforce adaptability, while Liang et al. (2025) confirm that combining digital and entrepreneurial training enhances intention and innovation capacity.

The framework envisions four intended outcomes:

1. Enhanced Employability. This is achieved through industry-aligned, digitally integrated curriculum that prepares learners for dynamic labor markets. As part of this initiative, the implementation will occur in two phases to ensure the scalability and effectiveness of the curriculum. The pilot phase will involve testing the curriculum in a select number of institutions to gather feedback and make necessary adjustments. Following successful evaluation, the scaling phase will expand the program to broader educational settings, ensuring that empirical data and stakeholder input inform each stage of implementation.
2. Entrepreneurial Excellence. It is achievable by equipping young people with innovation and digital skills to establish sustainable enterprises.
3. Socio-Economic Empowerment. By embedding asset-based strategies and technology-enabled participation in inclusive growth (Aravena et al., 2024). (Chen et al., 2024)
4. Lifelong Learning Competence. By cultivating adaptability and self-directed learning using technology as a lifelong enabler (Imjai, Aujirapongpan, & Yaacob, 2024).

Although current research provides valuable insights into teaching methods, digital tools, and teacher training, there remain gaps in integrating entrepreneurship, digital skills, and sustainable development within a unified vocational framework for underprivileged youth. Few studies examine curriculum models that address youth psychology, community strengths, and digital empowerment simultaneously.

There is also a shortage of clear teaching frameworks to help educators work with underprivileged youth. Without standard syllabus designs and content guidelines, it is hard to deliver consistent lessons. Filling these gaps is crucial for enhancing vocational education, enabling it to help youth not only find jobs but also become resilient and innovative members of society.

4. Discussion

This section explains how the findings from the literature review on underprivileged youth, entrepreneurship training, and vocational curriculum were combined to shape the main idea of this study. The analysis revealed that understanding youth psychology and employing asset-based and problem-based learning are crucial to fostering economic resilience in underprivileged youth. This approach helps develop self-confidence and leadership while promoting positive growth by focusing on strengths rather than weaknesses.

A vocational entrepreneurship framework that mixes classroom learning with hands-on training is important for developing well-rounded problem solvers. Including psychological and emotional support in this framework helps boost motivation and perseverance, addressing the common struggle among underprivileged youth between needing help and wanting independence.

Adding technology-driven strategies to this framework makes it even more effective. Digital tools, simulations, and online platforms can make learning more accessible and personalized, helping students build the skills they need for today's job market. When asset-based methods are supported by technology, they promote digital inclusion and long-term economic empowerment. As a result, this study suggests a model to reduce poverty by combining problem-based learning, asset-based methods, and technology-supported skill training. This three-part approach helps youth build the thinking, emotional, and practical skills they need for lasting progress. The EmpowerED framework places youth psychology at the heart of vocational education, ensuring empowerment stems from both personal growth and practical skills.

Figure 1 presents the Point of Departure (POD) tre*e* diagram, which uses the process of cross-analyzing and integrating possibilities to reach a high-possibility solution as a point of departure for each Research Construct.

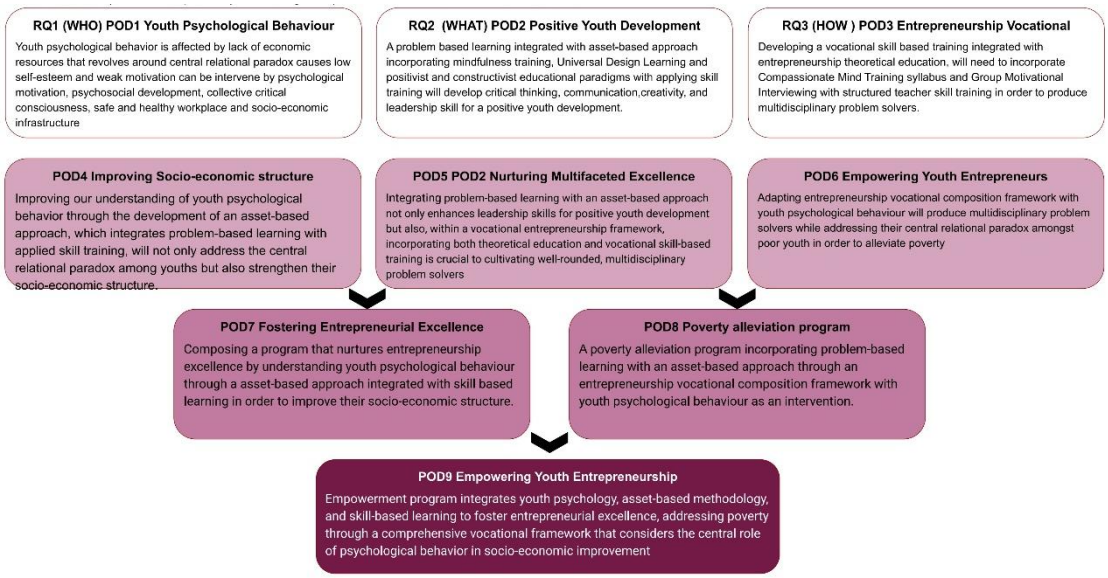

Figure 1: POD Tree Diagram

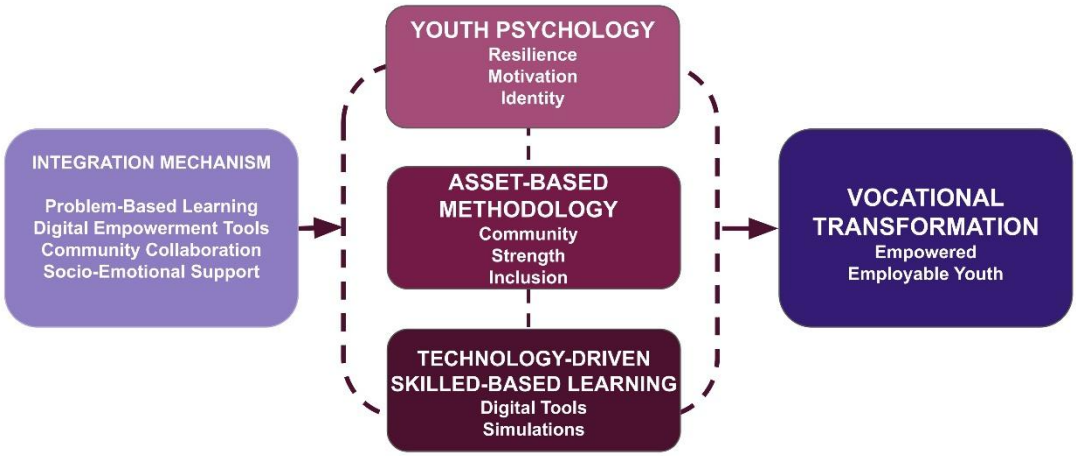

Figure 2: Conceptual Framework

Figure 2 outlines the EmpowerED conceptual framework, depicting the integration of youth psychology, asset-based methodology, and technology-driven skill-based learning as interdependent pillars of vocational transformation.

Overall, this framework offers a comprehensive approach to rethinking vocational education for today. It provides underprivileged youth with the entrepreneurial, digital, and emotional skills they need to contribute to national development and economic growth.

4.1 Practical Implementation of the EmpowerED Framework

This section elaborates on the practical implementation of the EmpowerED framework within vocational education contexts, particularly in the Malaysian TVET ecosystem.

The implementation of the framework can be structured into three interconnected phases: integration, application, and evaluation. In the integration phase, curriculum designers incorporate the three core components of the framework that includes youth psychology, asset-based methodology, and technology-driven skill development into existing vocational modules. This involves embedding socio-emotional learning elements, identifying learners' existing strengths and community assets, and aligning digital tools with learning outcomes.

In the application phase, teaching and learning activities are delivered through blended approaches combining classroom instruction, digital platforms, and experiential learning. For instance, problem-based learning projects, digital simulations, and community-based assignments can be used to foster both technical and entrepreneurial competencies. Educators play a critical role in facilitating adaptive learning environments that support both individual growth and collaborative engagement.

The evaluation phase focuses on measuring the effectiveness of the framework using key performance indicators such as student engagement, skill acquisition, entrepreneurial intention, and employability outcomes. Digital monitoring tools and feedback mechanisms can be utilized to continuously refine curriculum delivery and ensure alignment with industry needs.
By outlining these implementation phases, the EmpowerED framework moves beyond a conceptual model and provides a practical pathway for transforming vocational education. This enhancement strengthens the applicability of the framework and contributes to its potential scalability across diverse educational contexts.

5. Conclusion

This paper presents a novel approach to vocational education, combining asset-based and technology-driven strategies to support low-income youth in achieving success in today's economy. It suggests creating a curriculum that combines youth psychology, asset-based methods, and technology-supported skill training to develop entrepreneurial skills and foster economic resilience.

The EmpowerED framework puts psychological empowerment at the center of lasting change in vocational education. Utilizing digital tools and entrepreneurship training enables young people to develop practical skills for the future. This model addresses poverty by equipping young people with both confidence and technical skills, enabling them to secure employment, drive innovation, and contribute to their communities.

By combining asset-based and digital learning, this approach helps create young entrepreneurs with strong digital skills who can drive national growth by creating jobs and supporting inclusive economic progress. Future research should continue to develop and test training models that boost youth empowerment and adaptive learning for today's world. Two priority research questions could guide this endeavor:

RQ1: what specific digital skills and entrepreneurial competencies are most effective in fostering economic empowerment among underprivileged youth?
RQ2: how do collaborative community engagement initiatives enhance the scalability and sustainability of asset-based vocational training programs?
Addressing these questions will invite collaborative action and further strengthen the impact of vocational education reforms.

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Conflict of Interest Statement
The authors declare that there is no conflict of interest regarding the publication of this study.

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