

An Integrated Inclusive TVET Development Model for Students with Special Educational Needs Through Lifelong Learning Programmes

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Abstract—Even though TVET development is being implemented in increasing numbers of schools, the mechanisms for the development of SSEN students are not well understood. As technical competency and employability are the main focuses of previous research, it is still challenging to capture how the learning experience impacts on the overall development of the students. This paper provides a detailed conceptual framework for the development of SSEN students who are engaged in lifelong learning programmes in a systemic way in the field of TVET. We conducted a systematic literature review (SLR) on Scopus, Web of Science, ERIC and ScienceDirect databases from 290 records and selected 35 high-quality studies from 2020-2025 based on a rigorous screening and quality evaluation process. Thematic synthesis uncovered five interrelated domains that affect SSEN development - inclusive learning environment, competency development, psychological empowerment, lifelong learning participation and student outcomes. In this manner, the review identified a clear gap in the existing TVET literature which mainly focuses on a single competency-employability model and the absence of psychological and environmental effects. We found that self-efficacy and learning motivation play important roles as key mediators in translating skills acquisition into meaningful development and that institutional support and inclusive learning environments are integral to these interlinked processes along with supporting them. The integrated Inclusive TVET Development Model developed in this study is a model to reframe student development as an inter-dependent interaction of cognitive, behavioural, psychological and environmental factors. The integration of Human Capital Theory, Inclusive Education Theory, Lifelong Learning Theory, Constructivist Theory and Self-Efficacy Theory to the model offers a framework for better understanding of the development of inclusive TVET and a basis for future empirical assessment. All these findings have important implications for the policymakers, Community Colleges and TVET institutions who are seeking to develop more and more inclusive lifelong learning programs for SSEN learners.

Keywords: Inclusive TVET; Special Educational Needs; Lifelong Learning; Self-Efficacy; Student Development; Employability

1. INTRODUCTION

Technical and Vocational Education and Training (TVET) has become a strategic mechanism for human capital development, workforce readiness, social inclusion, and lifelong learning participation worldwide. Contemporary educational systems increasingly recognise that successful development extends beyond academic achievement and technical competency to include employability, independence, social participation, emotional well-being, and lifelong adaptability. For Students with Special Educational Needs (SSEN), TVET plays an even more critical role by providing opportunities for vocational competency development, community participation, and sustainable employment pathways.

Recent educational reforms have emphasised the importance of inclusive education in ensuring equitable access to learning opportunities for learners with disabilities. Inclusive TVET programmes have consequently expanded across many countries to support competency acquisition and workforce participation among SSEN learners. In Malaysia, Community Colleges have emerged as important providers of lifelong learning programmes that offer flexible, community-based learning opportunities for diverse learner groups, including students with disabilities and special educational needs. Through modular and competency-based learning approaches, Community Colleges aim to enhance technical competencies, employability readiness, entrepreneurship, and lifelong learning participation.

Previous studies have consistently reported positive outcomes associated with inclusive TVET and lifelong learning programmes. Research has shown that vocational education contributes positively to employability, workforce readiness, self-confidence, social participation, and independent living skills among learners with disabilities. Studies by Lindsay et al. (2020, 2022), Florian (2021), Sharma et al. (2021), Santilli et al. (2021), and Rahman and Othman (2025) demonstrated that inclusive educational environments and vocational training programmes can improve participation, employability, competency development, and educational outcomes. Similarly, lifelong learning studies emphasise that experiential learning, learner autonomy, and continuous skills development contribute positively to personal and professional growth.

Despite these contributions, existing literature remains fragmented. Most studies adopt a competency-based perspective rooted in Human Capital Theory and primarily focus on technical skills acquisition and employability outcomes. While these studies provide valuable insights, they offer limited explanations regarding how educational experiences contribute to the holistic development of SSEN learners. Existing models often assume a linear progression from knowledge acquisition to skills development and subsequently to employability. However, such assumptions fail to account for the complexity of developmental processes among learners with special educational needs.

Furthermore, previous studies have frequently examined knowledge, skills, employability, self-confidence, motivation, and inclusion as independent constructs rather than integrating them into a comprehensive developmental framework. Psychological variables such as self-efficacy and learning motivation are often excluded from TVET models

despite growing evidence suggesting their importance in educational persistence and achievement. Similarly, the role of institutional support and inclusive learning environments remains underexplored as mechanisms influencing developmental outcomes. Existing studies also provide limited explanations regarding how these factors interact to facilitate meaningful student development.

A review of recent literature reveals a significant research gap. No existing study has developed a comprehensive model integrating competency development, psychological empowerment, institutional support, and inclusive learning environments to explain holistic student development among SSEN learners participating in lifelong learning programmes. Consequently, there remains a need for a conceptual framework capable of explaining the dynamic interactions among cognitive, behavioural, psychological, and environmental factors influencing learner development.

Therefore, this study aims to develop an Integrated Inclusive TVET Development Model for Students with Special Educational Needs participating in lifelong learning programmes. Specifically, the study seeks to identify key factors influencing SSEN development, synthesise existing evidence concerning inclusive TVET and lifelong learning, and propose an integrated conceptual framework that explains relationships among knowledge, understanding, skills development, self-efficacy, learning motivation, institutional support, inclusive learning environments, and student development outcomes. The proposed model integrates Human Capital Theory, Inclusive Education Theory, Lifelong Learning Theory, Constructivist Theory, and Self-Efficacy Theory to provide a comprehensive explanation of inclusive TVET development and establish a foundation for future empirical validation.

2. RESEARCH METHODS

2.1 Research Design

This study employed a Systematic Literature Review (SLR) guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) framework. The SLR approach was selected because it enables a rigorous, transparent, and replicable synthesis of existing evidence concerning inclusive TVET, lifelong learning, and SSEN development. The review addressed the following research questions:

RQ1: What factors influence the holistic development of SSEN learners in lifelong learning and TVET programmes?

RQ2: How do knowledge, understanding, skills development, self-efficacy, learning motivation, institutional support, and inclusive learning environments interact to influence student development outcomes?

2.2 Search Strategy

The literature search was conducted between January and March 2026 using four databases: Scopus, Web of Science, ERIC, and ScienceDirect. Publications from 2020 to 2025 were considered to ensure contemporary relevance. The search string included combinations of the following keywords:

- a. ("Special Educational Needs" OR SEN OR Disability OR Disabilities) AND
- b. ("TVET" OR "Vocational Education" OR "Technical and Vocational Education and Training") AND
- c. ("Lifelong Learning" OR "Adult Learning") AND
- d. ("Student Development" OR Employability OR Competency OR Skills Development)

A total of 290 records were identified.

2.3 Inclusion and Exclusion Criteria

Studies were included if they were peer-reviewed journal articles published between 2020 and 2025, indexed in Scopus or Web of Science, written in English, and focused on TVET, lifelong learning, disability studies, inclusive education, employability, competency development, or SSEN learners. Conference papers, book chapters, editorials, duplicated records, non-English publications, and studies unrelated to TVET or special educational needs were excluded.

2.4 Article Screening and Quality Assessment

The PRISMA 2020 screening process reduced the initial 290 records to 35 high-quality articles. Quality assessment was conducted using the Mixed Methods Appraisal Tool (MMAT 2018). Only studies achieving moderate and high-quality ratings were included in the final synthesis.

2.5 Data Analysis

Thematic synthesis was employed to analyse the selected studies. Repeated coding and categorisation procedures were conducted to identify recurring concepts, theoretical relationships, mediating mechanisms, contextual influences, and developmental pathways.

3. RESULTS AND DISCUSSION

The thematic synthesis identified five major themes influencing SSEN development within lifelong learning and TVET contexts: Inclusive TVET Practices, Competency Development, Psychological Empowerment, Lifelong Learning Participation, and Holistic Student Development.

The first theme highlights the importance of inclusive learning environments and accessibility. Although accessibility remains fundamental, the literature demonstrates that meaningful inclusion requires pedagogical adaptation, institutional support, social participation, and learner engagement. Inclusive learning environments provide opportunities for learners with disabilities to participate actively in educational experiences and achieve developmental outcomes beyond technical competency acquisition.

The second theme concerns competency development and human capital formation. Consistent with Human Capital Theory, vocational education contributes significantly to technical competency development and workforce readiness. However, the review suggests that competency acquisition alone does not sufficiently explain developmental outcomes among SSEN learners. Evidence indicates that many learners continue to face employability and participation barriers despite possessing adequate vocational skills.

The third theme identifies psychological empowerment as a critical developmental mechanism. Self-efficacy, confidence, resilience, and self-determination consistently emerged as significant predictors of educational persistence and successful participation. The review suggests that self-efficacy functions as a mediating mechanism through which competency development translates into meaningful developmental outcomes. Consequently, skills acquisition alone is insufficient without learners possessing confidence in their ability to apply acquired competencies.

The fourth theme concerns learning motivation and lifelong learning participation. Motivation influences programme engagement, completion, adaptability, and continuous learning participation. The evidence suggests that motivated learners are more likely to persist in training activities, overcome learning barriers, and pursue personal and professional goals. Learning motivation therefore functions as an additional developmental pathway connecting competency development to broader student outcomes. The final theme highlights the multidimensional nature of student development. Rather than viewing employability as the sole indicator of success, recent literature advocates broader developmental dimensions including independent living skills, social participation, emotional well-being, self-determination, and lifelong learning readiness. This finding represents a significant shift from traditional competency-based perspectives toward a more holistic understanding of learner development.

The synthesis further reveals substantial theoretical overlap among Human Capital Theory, Constructivist Theory, Self-Efficacy Theory, Inclusive Education Theory, and Lifelong Learning Theory. Human Capital Theory explains competency acquisition, Constructivist Theory explains knowledge construction through experience, Self-Efficacy Theory explains confidence and behavioural persistence, while Inclusive Education Theory explains environmental and institutional support mechanisms. Together, these theories suggest that student development is a dynamic process influenced by interactions among cognitive, behavioural, psychological, and environmental factors.

Based on these findings, an Integrated Inclusive TVET Development Model is proposed. The model positions knowledge, understanding, and skills development as foundational competency variables. Self-efficacy and learning motivation function as mediating variables linking competency development to student development outcomes. Institutional support directly influences student development, while inclusive learning environments moderate developmental relationships. Student development is conceptualised as a multidimensional construct encompassing employability, independent living skills, social participation, emotional well-being, and lifelong learning readiness.

4. CONCLUSIONS

This study developed an Integrated Inclusive TVET Development Model for Students with Special Educational Needs through lifelong learning programmes based on a systematic review of contemporary literature. The findings demonstrate that student development extends beyond competency acquisition and employability outcomes. Instead, development is influenced by complex interactions among cognitive, behavioural, psychological, and environmental factors. The review identified self-efficacy and learning motivation as critical mediating mechanisms that transform competency acquisition into meaningful developmental outcomes. Furthermore, institutional support and inclusive learning environments play essential roles in facilitating participation, engagement, and learner success. The proposed model therefore extends existing TVET literature by integrating competency development, psychological empowerment, and environmental support within a single conceptual framework. Theoretically, the study contributes to the advancement of inclusive TVET scholarship by integrating Human Capital Theory, Inclusive Education Theory, Lifelong Learning Theory, Constructivist Theory, and Self-Efficacy Theory. Practically, the findings suggest that Community Colleges and TVET institutions should adopt holistic learner development strategies that strengthen confidence, motivation, inclusion, and lifelong participation alongside technical competency development. Future research should empirically validate the proposed model using Structural Equation Modelling (SEM) or Partial Least Squares Structural Equation Modelling (PLS-SEM) involving SSEN learners across Community Colleges and TVET institutions. Such investigations would provide stronger evidence regarding the mechanisms underlying inclusive TVET development and support evidence-based policy formulation.

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