

**Article Review: STEM and TVET in the Caribbean**

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Due Date

## **Article Review: STEM and TVET in the Caribbean**

### **Summary of the Article**

The article "STEM and TVET in the Caribbean: A Framework for Integration at the Primary, Secondary, and Tertiary Levels" by Dixon and Hutton (2016) presents a comprehensive analysis of the state of science, technology, engineering, and mathematics (STEM) and technical and vocational education and training (TVET) in the Caribbean. The authors argue that a lack of integration between STEM and TVET has led to inadequate skills development and a shortage of qualified personnel in these fields, hindering economic growth and development in the region. This is also replicated across many nations across the globe.

The article provides a detailed analysis of the current state of STEM and TVET education in the Caribbean, highlighting the region's challenges and opportunities in the labor market and gaps in teaching the subjects. The authors propose a framework for integrating STEM and TVET across all education levels, from primary through secondary to tertiary levels, to address these challenges and enhance regional skills development. The framework comprises six interrelated components: curriculum development, teacher professional development, pedagogy, assessment, infrastructure, and partnerships. This is because even the credibility and capabilities of the STEM teachers in the region is a challenge.

The authors argue that the proposed framework will provide a more holistic and coordinated approach to STEM and TVET education in the Caribbean, leading to better outcomes for learners, educators, and the wider society. The article concludes by calling for action by policymakers, educators, and other stakeholders to implement the proposed framework

and ensure that STEM and TVET education in the Caribbean is aligned with the needs of the region's economy and society.

### **Analysis of Strengths and Weaknesses**

#### **Strengths**

The article provides a comprehensive analysis of the current state of STEM and TVET education in the Caribbean and proposes a framework for integrating these two areas of education. The authors make a compelling case for addressing the challenges facing STEM and TVET education in the region and highlights the potential benefits of integrating these two areas. These include benefits like positive subject reception, which would translate to better student performance.

The article is well-structured, with clear headings and subheadings that guide the reader through the content. The authors provide a detailed discussion of each component of the proposed framework and provide examples of how these components can be implemented in the Caribbean context. Using examples, case studies, and reports from the region helps contextualize the discussion and makes the content more relevant to the intended audience.

One strength of the article is that it addresses a pressing issue facing the Caribbean region and provides a clear roadmap for addressing the issue from its roots. The authors present a clear argument for why STEM and TVET integration is important and provide a practical framework for achieving this integration. For example, the authors clearly present facts and statistics that relate the field directly to the market needs, especially for specific skills in the country compared to other options. In this instance, only 14% of students registered for STEM-related courses in the Caribbean between 2011 and 2017 (p.4). This makes the article highly relevant and useful for

policymakers, educators, and other stakeholders involved in STEM and TVET education in the Caribbean. Notwithstanding, the article gives factual figures and relevant statistics to back up the argument.

### **Weaknesses**

However, one weakness of the article is that it focuses primarily on the theoretical aspects of the proposed framework and does not provide a detailed discussion of the practical implementation challenges. While the authors provide some examples of how the framework's components can be implemented, such as through integration, there is little discussion of the practical challenges that may arise in the implementation process. This may limit the article's usefulness for practitioners looking for practical guidance on implementing the proposed framework since the possibility of new challenges is not covered in the article.

### **Application to Practice**

The proposed framework for integrating STEM and TVET education in the Caribbean has several implications for practice. Firstly, it highlights the importance of a coordinated and holistic approach to STEM and TVET education. Practitioners can use this framework to guide the development of STEM and TVET curricula that are aligned with the needs of the region's economy and society.

Secondly, the framework emphasizes on the importance of teacher professional development and pedagogy in STEM and TVET education. Practitioners can use this framework to guide the development of professional development programs for teachers and to improve their pedagogical practices in STEM and TVET education.

Thirdly, the framework emphasizes integrating STEM and TVET education across primary, secondary and tertiary levels. Practitioners can use this framework to guide interest development and understanding of key concepts ideal in the labor market. This includes skills such as problem-solving and decision-making. This can help learners acquire the necessary skills and knowledge to succeed in these fields.

Finally, the framework highlights the importance of partnerships between educational institutions and industry in STEM and TVET education. Practitioners can use this framework to establish partnerships with industry stakeholders to enhance learners' exposure to real-world applications of STEM and TVET education. This can help bridge the gap between academic learning and industry needs, leading to better outcomes for learners and the wider society.

### **Key Insights and Lessons Learnt**

One of the key insights from the article is that integrating STEM and TVET education early in a learner's journey enhances improved skills development. This is very beneficial, especially to a developing and diverse labor market like the Caribbean. The authors make a compelling case for addressing the challenges facing STEM and TVET education in the region and highlight the potential benefits of integrating these two areas. This highlights the importance of a coordinated and comprehensive approach to STEM and TVET education that considers the needs of learners, educators, industry stakeholders, and the wider society.

Another key insight from the article is the importance of teacher professional development and pedagogy in boosting and enhancing STEM and TVET education. The authors highlight the need for teachers to develop the necessary skills and knowledge to teach STEM and TVET effectively. Also, they discuss on the need to change the mindset of educators to help

them restructure their teaching methods and assessments and improve their competency. This underscores the importance of ongoing professional development for teachers and the need to improve pedagogical practices in STEM and TVET education.

Finally, the article highlights the importance of interconnectedness between educational institutions and industry in STEM and TVET education. The authors argue that constant communication between the two can help bridge the gap between academic learning and industry needs. As a result, this will enhance learners' exposure to real-world STEM and TVET education applications. This underscores the importance of collaboration and cooperation between stakeholders involved in STEM and TVET education to ensure that learners acquire the necessary skills and knowledge to succeed in these fields.

### **Significance of the Article and Issues for Further Research**

The article significantly contributes to the literature on STEM and TVET education in the Caribbean. The article presents a comprehensive analysis of the current state of STEM and TVET education in the region and proposes a practical framework for integrating these two areas of education. The article highlights the pressing need to address STEM and TVET education challenges in the Caribbean and underscores the potential benefits of integrating these two areas. The proposed framework has several implications for practice and can guide the development of STEM and TVET education in the region.

However, there is still a need for further research on the practical challenges of implementing the proposed framework. While the authors provide some examples of how the framework's components can be implemented, there is little discussion of the practical

challenges that may arise in the implementation process. Further research is needed to identify these challenges and develop strategies for addressing them.

In addition, further research is needed to evaluate the effectiveness of the proposed framework in enhancing skills development in STEM and TVET education in the Caribbean. While the authors provide a compelling argument for the need to integrate STEM and TVET education, there is little empirical evidence to support the effectiveness of the proposed framework. Further research is needed to evaluate the impact of the proposed framework on learners, educators, and the wider society in the Caribbean.

## **Conclusion**

In conclusion, the article "STEM and TVET in the Caribbean: A Framework for Integration at the Primary, Secondary, and Tertiary Levels" by Dixon and Hutton (2016) presents a comprehensive analysis of the current state of STEM and TVET education in the Caribbean and proposes a practical framework for integrating these two areas of education. The article highlights the importance of addressing the challenges facing STEM and TVET education in the region and underscores the potential benefits of integrating these two areas.

The proposed framework has several implications for practice, including the need for teacher professional development, assessment strategies aligned with learning outcomes, and the importance of partnerships between educational institutions and industry stakeholders. However, there is still a need for further research on the practical challenges of implementing the proposed framework and evaluating its effectiveness in enhancing skills development in STEM and TVET education in the Caribbean. The proposed framework has the potential to enhance skills development and bridge the gap between academic learning and industry needs in STEM and

TVET education. Hopefully, this article will inspire further research and practical implementation of the proposed framework to improve STEM and TVET education in the Caribbean and beyond.



### Reference

Dixon, R., & Hutton, D. (2016). Stem and TVET in the Caribbean: A Framework for Integration at the Primary, Secondary, and Tertiary Levels. *Caribbean Curriculum*, 24, 1–26.

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