

# Challenges of Non-STEM Students in Psychology: Disruptive Learning Dynamics: A Literature Review

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## ABSTRACT

This research meticulously explores the complex terrain of disruptive learning encounters among non-STEM psychology students at Father Saturnino Urios University (FSUU), aiming to unravel the intricate moderating factors that shape the relationship between disrupted learning progression and psychological challenges. Situated within the framework of the K to 12 Program, which introduced diversified tracks in secondary education, students were empowered to align their academic pursuits with their unique aptitudes and career aspirations. Nevertheless, a pronounced misalignment between senior high school strands and subsequent college courses, particularly within STEM fields, has emerged as a notable concern. Guided by the theoretical underpinning of the vertical alignment theory, this study posits that the misalignment between high school strands and college courses not only adversely impacts academic performance but also engenders psychological challenges. Embracing an Exploratory Sequential Mixed Method Design, the research seamlessly integrates qualitative and quantitative methodologies, commencing with a qualitative exploration to inform subsequent robust quantitative measures. The findings of this study hold significance in unveiling nuanced factors underpinning disruptive learning, with the potential to inform educational policies and practices, fostering inclusive experiences for diverse student cohorts.

**Keywords**— Curriculum alignment, vertically aligned curriculum, learning progression, academic challenges.

## INTRODUCTION

In examining the challenges faced by non-STEM students in psychology, particularly the disruptive learning dynamics at Father Saturnino Urios University, this review delves into the intricate academic and psychological dimensions of students whose college choices do not align with their senior high school strands. Such exploration is pivotal for the academic community, shedding light on the impact of misaligned curricula and providing insights to improve educational practices. This research holds real-world significance, given that students' college experiences can significantly influence their future career prospects and overall well-being. The increasing number of students struggling with this issue underscores the timeliness of this research. Within this review, we address the academic and psychological challenges confronting non-STEM psychology students, dissect the contributing factors to these challenges, and examine the moderating variables that influence their educational journey.

The sources integrated into this review encompass the last decade, ensuring a contemporary analysis of the subject matter. The primary objective is to uncover the challenges faced by non-STEM psychology students, identify the factors shaping their experiences, and explore the influence of moderating factors on the relationship between disrupted learning progression and psychological challenges, thus providing readers with profound insights into these academic and psychological dynamics and their broader implications for

educational policies and practices.

## **METHODS**

While conducting this literature review, a meticulously planned search strategy was employed to identify pertinent sources within the domains of curriculum alignments, learning progressions, and vertically aligned curricula. We accessed several distinguished academic databases, including but not limited to PubMed, ERIC (Education Resources Information Center), PsycINFO, Google Scholar, and JSTOR. To ensure precision in our search, we employed a thoughtfully curated set of keywords and search phrases, encompassing terms such as “curriculum alignment,” “learning progression,” “vertically aligned curriculum,” “academic challenges,” and their variations.

In addition to database searches, we harnessed the power of citation chaining and reference tracking. These supplementary techniques were instrumental in discovering primary works that may have lost our initial database inquiries.

The criteria for source selection were thoughtfully crafted to uphold the relevance, quality, and currency of the literature under consideration:

### **Inclusion Criteria:**

We considered peer-reviewed journal articles, conference papers, and books for inclusion. Our primary focus was on sources published within the last decade (from 2013 to the current year), ensuring that our review reflects the latest in contemporary research.

### **Exclusion Criteria:**

Grey literature, such as unpublished theses or dissertations, was deliberately excluded from this review. Non-English language sources were omitted, a decision made to preserve the accessibility and consistency of the review. Our approach to analyzing the selected literature follows a structured methodology:

Each source will undergo thematic analysis to uncover recurring themes, concepts, and key findings within the realms of curriculum alignments, learning progressions, and vertically aligned curricula. This method of thematic analysis will facilitate the organization of literature and the establishment of meaningful connections between various topics. To enable meta-analysis, we will systematically code and categorize key information and findings from each source, aligning them with relevant themes and concepts. This systematic coding process will equip us to synthesize information across the selected literature effectively. In tackling the challenge of duplicated or overlapping information across sources, we will conduct a thorough examination of the literature. When multiple sources converge on similar findings or concepts, we will make diligent efforts to present a unified overview, emphasizing any nuanced perspectives and additional insights that emerge.

## **REVIEW OF LITERATURE**

### **Curriculum Alignments**

We should develop and offer cohesive curricula systematically aligned with program objectives. These objectives should serve as the foundation for planning course activities and grading schemes. As noted by Allen [1], learning objectives play a pivotal role in guiding curriculum planning and act as the criteria for measuring program success. However, achieving alignment in higher education curricula can often be challenging due to inadequate communication between educators and the constant evolution of programs,

modules, and faculty. Squires [2] emphasizes the significance of aligning the curriculum with state standards and assessment specifications. This alignment ensures that assessments and standards are seamlessly integrated into the instructional process, fostering a comprehensive educational experience. Ultimately, by ensuring alignment in the curriculum, students gain valuable opportunities to learn and practice “writing on self-selected topics in a variety of literary forms”.

Fenwick English [3] introduced a framework comprising three key components of the curriculum: the written, the taught, and the tested. The written curriculum typically comprises official documents issued by school districts, textbooks, or established standards. The taught curriculum emerges as teachers implement the written curriculum, often reflected in lesson plans and recorded classroom instruction. The tested curriculum involves standardized or state assessments and curriculum-embedded tests, which may also include student-written assignments used for evaluation.

Schubert [4] underscores the prevalence of the term “curriculum” within the school system, noting its frequent use in curriculum theory, educational philosophy, and psychology studies. Curriculum-related documents developed by state-managed boards are essential reading for educators. However, Fraser and Bosanquet [5] point out that while the term “curriculum” is commonly employed in academic discussions, policy and planning documents, and advisory bodies, it doesn’t always have consistent usage among academics. Stark and Lattuca [6] contend that, for many academics, the curriculum is essentially synonymous with the syllabus. It signifies the content within a specific discipline, the units offered to students, and the timeframe in which they are taught. Fraser and Bosanquet [7] and Smith and Lovat [8] emphasize that, at the individual level, what’s crucial is not the definition of “curriculum” but the recognition that academics attribute various meanings to the term, often using it without fully understanding its complexity. To foster a shared language and understanding of curriculum within the academic community, Fraser and Bosanquet argue for an exploration of the interdependence of the elements in this intricate phenomenon known as “curriculum” [9].

### **Learning Progression**

Recognizing the significance of disciplinary discourse practice, scaffolding learning with tools and technologies, and adopting “assessment for learning” instructional strategies, scholars advocate for the coordination and sequencing of learning along conceptual trajectories, developmental corridors, and learning progressions. According to Driver, Leach, Scott, and Wood-Robinson [10], Brown [11], and the National Research Council [12], these approaches enhance the educational experience. Philosophers such as Dudley Shapere [13] and Joseph Novak [14] offer distinct perspectives on the growth of knowledge, highlighting the importance of understanding the dynamic processes involved in deepening and broadening scientific knowledge.

Learning progressions are built upon earlier work by Mark Wilson and colleagues [15], featuring “construct maps” that provide a coherent and substantive definition of the content and an underlying continuum [16]. These pathways rely on cognitive science research to describe how students progress from novice to expert understanding of a concept. While they draw on research describing students’ ideas at various ages, they are partly hypothetical or inferential, as long-term longitudinal accounts of individual student learning are scarce [17].

Learning progressions and learning trajectories are viewed as essential strategies for aligning curriculum, instruction, and assessment in science and mathematics education [18]. These models offer a means to connect science and math learning through extended sequences of instruction, both vertically across grades and horizontally within a school year. This approach aims to facilitate the development of core knowledge and practices critical to scientific and mathematical reasoning.

Two general types of learning progressions are recognized: bottom-up progressions, based on iterative assessments of student learning, and top-down progressions, developed through logical task analysis of content domains and personal teaching experiences [19] [20]. Learning progressions necessitate a deliberate sequencing of teaching and learning expectations across different developmental stages, ages, or grade levels [21]. These standards address the specific learning needs and abilities of students at different stages of their intellectual, emotional, social, and physical development.

Alonzo and Steedle [22] define learning progressions as ordered descriptions of students' understanding of a given concept. They provide a promising framework for meaningful assessments, allowing for assessments, both large-scale and classroom-based, to be based on models of how understanding develops in a particular domain.

Learning progressions are considered a promising strategy for the redesign and reform of curriculum, instruction, and assessment. Corcoran, Mosher, and Rogat [23] argue that progressions can support the shift toward adaptive instruction and offer numerous potential learning benefits. However, the complexity of learning and the limited understanding of how student understanding develops present unique challenges for the development of learning progressions.

### **Vertically Aligned Curriculum**

The theory of vertical alignment posits a direct and linear relationship between the concepts taught to students at various levels of the educational process [24]. It suggests that learners who engage with a vertically aligned curriculum exhibit improved learning outcomes [25]. Vertical alignment involves purposefully structuring and logically sequencing teaching to ensure that students acquire the knowledge and skills needed for progressively more challenging, higher-level work [26].

## **DISCUSSION**

In our comprehensive review of literature encompassing curriculum alignments, learning progressions, and vertically aligned curricula, several key findings have emerged. The alignment of curriculum with program objectives, as emphasized by Allen [27], plays a pivotal role in guiding curriculum planning, which, in turn, acts as the criteria for measuring program success. Squires [28] further underscores the significance of aligning the curriculum with state standards and assessment specifications, fostering a comprehensive educational experience. This highlights the importance of coherence between educational objectives and activities. Within the realm of learning progressions, scholars like Driver, Leach, Scott, and Wood-Robinson [29], Brown [30], and the National Research Council [31] advocate for coordinating and sequencing learning along conceptual trajectories to enhance the educational experience. The concept of vertically aligned curriculum, as suggested by Kurz, Talapatra, and Roach [32], demonstrates a linear relationship between concepts taught at various educational levels, contributing to improved learning outcomes. These findings collectively provide insights into enhancing educational practices and aligning curricula with learning progressions to improve overall educational outcomes.

The academic implications of these findings are profound. They underscore the need for educational institutions to prioritize the alignment of curricula with program objectives to ensure a coherent learning experience. Emphasizing the alignment of curricula with state standards, as suggested by Squires [33], can lead to more comprehensive educational practices, thereby improving student performance and understanding. In terms of learning progressions, the coordination and sequencing of learning, as advocated by scholars such as Driver, Leach, Scott, and Wood-Robinson [34] and the National Research Council [35], offer a promising approach to enhancing educational outcomes by aligning instructional strategies with students' cognitive development. Additionally, the concept of vertically aligned curriculum, as proposed by

Kurz, Talapatra, and Roach [36], holds potential for improving learning outcomes by ensuring that students build a strong foundation before progressing to more advanced concepts. These academic implications call for the incorporation of these principles into educational policies and practices to enhance learning outcomes.

Real-world applications and policy implications are evident in the need to reform curriculum planning and development. By prioritizing curriculum alignment and adopting vertically aligned curricula, educational institutions can enhance the quality and effectiveness of their programs. For example, by aligning curriculum with state standards, institutions can improve the consistency and quality of education across the board, benefiting students and their prospects. Moreover, incorporating learning progressions into teaching strategies allows educators to adapt their methods to students' developmental stages, leading to better learning outcomes.

While these findings offer valuable insights, it is essential to acknowledge the limitations of this review.

The limitations of this review relate to its scope and methodology. The review primarily focuses on literature published within the last decade, potentially omitting earlier foundational works that may have contributed to the understanding of these concepts. Expanding the review to include older sources could provide a more comprehensive historical context.

Biases or shortcomings within the literature may have influenced the findings of this review. Some literature may prioritize specific perspectives or methods, potentially overlooking alternative viewpoints. It is important to recognize and address any biases or limitations in the source materials.

To overcome these limitations, future reviews could consider broadening the scope to encompass a more extensive historical context and engage in a more thorough analysis of biases or limitations within the literature. Additionally, further research could delve into specific case studies or practical applications of these concepts to provide a deeper understanding of their real-world impact.

## CONCLUSION

In this comprehensive literature review, we have delved into the intricate academic and psychological dimensions faced by non-STEM students in psychology, particularly at Father Saturnino Urios University. We explored the challenges these students encounter due to misaligned curricula and the impact of disruptive learning dynamics. The research unveiled the significance of aligning curriculum objectives with learning progressions and the benefits of implementing vertically aligned curricula. However, we also identified limitations in the existing literature.

Several research gaps and shortcomings in literature have become evident. While the importance of curriculum alignment, learning progressions, and vertically aligned curricula is acknowledged, there is a need for more specific and practical guidelines on how to implement these strategies effectively. Moreover, literature often lacks a comprehensive examination of the real-world applications and policy implications of these educational principles.

Our own research aims to address these gaps by providing concrete guidance on how institutions can align their curricula with program objectives. We will explore the practical implementation of learning progressions and vertically aligned curricula, offering educators and policymakers a roadmap to enhance the quality and effectiveness of education. By bridging the divide between theory and practice, our research endeavors to make a meaningful impact on the academic community and education systems.

Our research question evolved in the context of this literature review. We have synthesized insights from



existing research, particularly from Allen [36], Squires [37], and Kurz, Talapatra, and Roach [38], to formulate a research question that focuses on the practical implementation of curriculum alignment, learning progressions, and vertically aligned curricula. We aim to build upon the theoretical foundations laid by previous research and translate them into actionable steps.

The literature has influenced our choice of research design and methods. Specifically, insights from previous research have informed our decision to employ case studies and surveys to assess the effectiveness of curriculum alignment and the impact of learning progressions on students' educational experiences. By drawing from the strengths and weaknesses of existing methodologies, we aim to refine and tailor our own approach to bridge the gaps identified in the literature.

This review points to several areas where future research is needed. First and foremost, it is imperative to examine the long-term effects of curriculum alignment, learning progressions, and vertically aligned curricula on students' academic performance and career prospects. Additionally, as technology continues to evolve, it would be valuable to explore how emerging tools and platforms can enhance the implementation of these educational strategies. Finally, further investigation into the specific challenges faced by non-STEM students in various academic institutions can provide a more nuanced understanding of the issues they encounter and potential solutions.

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