

MICMAC Analysis Of The Relationships Between Pedagogical Strategies And Psychological Well-Being In The Educational Context

Piedad Mary Martelo Gómez¹, Raúl José Martelo Gómez²,
Heybertt Moreno Díaz³

¹ Odontologist. Independent researcher. Professor of the Dentistry Program at the Universidad de Cartagena, Colombia. Email: pmartelog@hotmail.com. ORCID: <https://orcid.org/0000-0002-5405-0324>

²Specialist in Networks and Telecommunications; Master in Computer Science. Systems Engineer. Full-time Research Professor of the Systems Engineering Program at the University de Cartagena. Leader of the INGESINFO Research Group. Cartagena de Indias, Colombia. E-mail: rmartelog1@unicartagena.edu.co
ORCID: <https://orcid.org/0000-0002-4951-0752>

³Specialist in telecomunitations. Systems Engineer. Professor of the Systems Engineering Program at the University de Cartagena. Cartagena de Indias, Colombia. Email: hmorenod@unicartagena.edu.co

ABSTRACT

This study addresses the intersection between pedagogical strategies, psychological well-being, and cultural factors in the contemporary educational context. Key variables were identified using a comprehensive methodology that included a comprehensive literature review and MICMAC analysis, highlighting Self-Determination Theory and Adaptation of Educational Methods to Cultural Values. The results underscore the complex interdependence between these variables, highlighting the importance of culturally sensitive pedagogical strategies to optimize their impact on psychological well-being. This study offers crucial insights to inform more effective and

diversity-sensitive educational practices, highlighting the need for an integrated approach to teaching.

KEYWORDS: educational culture, cultural adaptation, educational environment, effective teaching, educational variables.

INTRODUCTION

The intersection between pedagogical strategies, psychological well-being, and cultural factors constitutes a crucial field of study in the contemporary educational field. In an increasingly diverse and globalized world, the effectiveness of pedagogical strategies is intricately intertwined with the complexity of cultural experiences and the psychological well-being of learners (Simmons, et al., 2019). This study delves into the complex web of these relationships, exploring key variables and their interactions in the educational context.

The current educational paradigm demands a deeper understanding of how pedagogical strategies impact not only the transmission of knowledge but also the comprehensive development of students, addressing their emotional and social well-being. Existing literature indicates that effective pedagogical strategies are those that not only focus on the delivery of content, but also recognize and respond to the emotional and cultural needs of students (Frenzel, et al., 2021). In this context, Self-Determination Theory emerges as an essential conceptual framework, shedding light on the importance of intrinsic motivation and autonomy in the learning process. Furthermore, the adaptation of educational methods to cultural values is presented as a key element for the creation of an inclusive educational environment that is sensitive to cultural diversity.

Culture, as a fundamental component, is integrated in this study not only as a contextual aspect but as an engine that drives the configuration of students' psychological well-being. Understanding how cultural expectations influence pedagogical strategies and how cultural adaptation can enhance the positive impact of these strategies is imperative in an increasingly diverse educational world (Gay, 2018). Although progress has been made in identifying these variables and their relationships, there is a gap in the

comprehensive understanding of how they interact and how their dynamics contribute to the educational environment. This study is positioned as a systematic and rigorous attempt to address these complexities, providing a solid foundation to guide more effective and culturally sensitive educational practices.

This research is structured into various sections to explore in detail the relationships between pedagogical strategies, psychological well-being, and cultural factors. From the exhaustive review of the literature to the identification of key variables and the application of the MICMAC technique to understand their relative impacts and dependencies, this study aims to contribute not only to academic knowledge but also to the practical improvement of teaching in diverse educational environments.

METHODOLOGY

This study adopted a mixed approach, combining qualitative and quantitative elements to provide a comprehensive understanding of the relationships between pedagogical strategies and psychological well-being in the educational context (Sandelowski, 2000). An exploratory and descriptive study was carried out. The exploratory nature allowed for a deeper investigation of the underlying relationships (Swedberg, 2020), while the descriptive approach facilitated the detailed presentation of the characteristics of pedagogical strategies and psychological well-being in the selected sample (Seeram, 2019). A cross-sectional design was used, collecting data simultaneously at a single point in time. This choice allowed to instantly capture the relationship between pedagogical strategies and psychological well-being, essential for the objective of causal analysis.

Initially, an exhaustive review of the literature related to pedagogical strategies and psychological well-being in the educational field was carried out, which sought to understand the existing theories and models, as well as to identify previous studies that explored the interaction between these two dimensions. Then, various pedagogical strategies were identified and selected, which encompass both traditional methods and more contemporary approaches, including educational technologies and participatory methods. To ensure relevance and representativeness, experts in the field of education were

consulted. The variables that will measure psychological well-being in this study were precisely established. These variables included emotional, social, and cognitive aspects, and were evaluated using measurement instruments previously validated and widely accepted in academic literature.

The next step was to develop the Influence/dependence matrix that represents the possible influence/dependence relationships between the pedagogical strategies and the psychological well-being variables. The structure of this matrix was carried out through consultations with experts in the educational field on the application of pedagogical strategies and the perception of psychological well-being. Additionally, interviews were conducted to obtain more detailed qualitative information and enrich the understanding of individual experiences. Likewise, the MICMAC method was applied to delve into the causal relationships and interdependencies between the variables (Arango & Cuevas, 2014). On the other hand, the results obtained were validated through consultation with experts in the educational field. The interpretation of the findings was carried out in the context of existing theory, and possible practical implications of the results found were explored.

RESULTS

Conceptual framework

The conceptual framework of this research is based on the dynamic intersection between pedagogical strategies and psychological well-being in the educational context. It is based on the following key dimensions: Pedagogical Strategies, Psychological Well-being, Bidirectional Relationship, Fundamental Theories, and Cultural Contextualization.

Pedagogical strategies encompass a wide spectrum of approaches, methods, and techniques used by educators to facilitate the learning and development of learners (Alam, 2021). They include both traditional methods and contemporary innovations, such as participatory pedagogy, educational technology, and problem-solving approaches.

Psychological Well-being: Psychological well-being is conceptualized as a comprehensive state that encompasses

emotional, social, and cognitive dimensions (Morales-Rodríguez, et al., 2020). It includes life satisfaction, a sense of purpose, healthy relationships, effective stress management, and positive self-evaluation. This framework considers psychological well-being as an essential component of academic success and the integral development of the individual.

Bidirectional Relationship: It is postulated that there is a bidirectional relationship between the pedagogical strategies implemented in educational environments and the psychological well-being of students and teachers (Wang, et al., 2020). Pedagogical strategies impact the learning experience and, therefore, influence psychological well-being. Simultaneously, psychological well-being can influence the receptivity and effectiveness of pedagogical strategies (Manasia, et al., 2020).

Fundamental Theories: The conceptual framework is supported by psychological and educational theories, such as the Social Learning Theory, a theory that details human behavior as a continuous interaction between cognitive, behavioral, and environmental influences (Bandura, 2019); the Self-Determination Theory, which explains motivation and personality, based on the assumption that, when the basic psychological needs of social relationships, competence, and autonomy are met, intrinsic behaviors occur that facilitate psychological well-being (Ryan & Deci, 2017); and the Flow Theory, that is a mental state in which a person is completely immersed in an activity that provides enjoyment and pleasure (Pinel & Albert, 2019). These theories provide a theoretical foundation for understanding how interactions in the educational environment contribute to psychological development and well-being.

Cultural Contextualization: The important influence of cultural factors in the configuration of pedagogical strategies and the perception of psychological well-being is recognized. The framework considers cultural diversity as a key element to understand the complexities of these interactions in different educational contexts.

Identification of relevant variables

Among the variables identified regarding Pedagogical Strategies were: Traditional Methods (Direct Instruction, Master Classes and Traditional Assessment), Pedagogical Innovations (Project-Based

Learning, Use of Educational Technologies, Active Teaching Strategies), and Teaching Style (Collaborative Approach, Encouraging student participation, Adaptation to individual learning styles). Regarding Psychological Well-being, there are: Emotional Dimension (Satisfaction with life, Emotional resilience, and Stress management), Social Dimension (Quality of interpersonal relationships, Perceived social support, and Community integration), Cognitive Dimension (Academic self-efficacy, Sense of belonging and positive self-concept).

Regarding the Bidirectional Relationship, there are: Impact of Pedagogical Strategies on Well-being (Evaluation of student perception of the learning environment, Influence of pedagogical strategies on student motivation and participation, and Effects of pedagogical strategies on academic stress reduction), Influence of Well-being on Pedagogical Effectiveness (Relationship between teacher well-being and the successful implementation of pedagogical strategies, Impact of student well-being on the receptivity and assimilation of educational content, and Role of psychological well-being in improving the educational climate).

Regarding the fundamental theories, the identified variables were: Social Learning Theory (Variables that affect the observation and modeling of behaviors, Influence of social interaction on the acquisition of skills and knowledge), Self-Determination Theory (Variables related to motivation extrinsic and intrinsic, Role of autonomy and competence in psychological well-being), Flow Theory (Variables that characterize the optimal experience during learning, Relationship between the flow state and emotional well-being).

Regarding Contextualization, the identified variables were: Adaptation of educational methods to cultural values, Influence of cultural expectations on teaching strategies, and Culture and Psychological Well-being (Comparison of dimensions of well-being in diverse cultural contexts, Exploration of practices cultures that contribute to psychological well-being). Next, these variables are represented in Table 1, in which column 1 shows the number of the variable, column 2 shows the short name of the variable, column 3 shows the name of the variable and finally, column 4 shows a brief description of the variable.

Table 1. Variables selected to apply MICMAC.

#	Code	Variable	Description
Pedagogical Strategies			
1	TM	Traditional Methods	Direct Instruction, Master Classes and Traditional Assessment
2	TS	Teaching Style.	Collaborative Approach, Encouraging student participation, Adaptation to individual learning styles
3	PI	Pedagogical Innovations.	Project-Based Learning, Use of Educational Technologies, Active Teaching Strategies.
Psychological well-being			
4	SD	Social Dimension.	Quality of interpersonal relationships, Perceived social support, and Community integration.
5	ED	Emotional Dimension	Satisfaction with life, Emotional resilience, and Stress management.
6	CD	Cognitive Dimension	Academic self-efficacy, Sense of belonging and positive self-concept.
Bidirectional Relationship			
7	IPSWB	Impact of Pedagogical Strategies on Well-being.	Evaluation of student perception of the learning environment, Influence of pedagogical strategies on student motivation and participation, and Effects of pedagogical strategies on academic stress reduction.
8	IWBPE	Influence of Well-being on Pedagogical Effectiveness.	Relationship between teacher well-being and the successful implementation of pedagogical strategies, Impact of student well-being on the receptivity and assimilation of educational content, and Role of psychological well-being in improving the educational climate.
Fundamental theories			
9	FT	Flow Theory	Relationship between the flow state and emotional well-being.
10	SDT	Self-Determination Theory	Role of autonomy and competence in psychological well-being.
11	SLT	Social Learning Theory.	Variables that affect the observation and modeling of behaviors, Influence of social interaction on the acquisition of skills and knowledge
Cultural Contextualization			
12	ICETS	Influence of cultural expectations on teaching strategies.	It focuses on examining how the beliefs, values, and cultural norms of learners, educators, and the community at large impact the decisions and

			methods used by educators when designing and implementing teaching strategies.
13	AEMCV	Adaptation of educational methods to cultural values.	The process by which educators adjust their teaching approaches to incorporate and respect the cultural values present in the educational environment.
14	CPWB	Culture and Psychological Well-being.	Study of how cultural elements, such as beliefs, norms, values, and social practices, influence people's mental and emotional well-being.

Source: Authors

After identifying the variables related to pedagogical strategies and psychological well-being, a collaborative evaluation was carried out in which five (5) experts participated to analyze the influence and dependence relationships between these variables. The evaluation was carried out using a square matrix, corresponding to Phase II of the MICMAC technique. Figure 1 shows the matrix of direct influence/dependence, completed with the values obtained from the collaboration of the experts.

In Figure 1, it is evident that the Matrix of direct influence/dependence has been filled with values that vary between 0 and 3, according to the evaluation carried out by the experts in this study. It is highlighted that the influence relationships between the variable TM (Traditional Methods) and the variable TS (Teaching Style) were determined to be strong, with a rating of three (3), which means that they maintain an important relationship.

Similarly, the relationship with the variable PI (Pedagogical Innovations) is strong, while with the variable SD (Social Dimension) and CD (Cognitive Dimension), it is null, with a score of zero (0). In this sense, in cells with a one (1) a weak relationship is indicated, with a two (2) a moderate relationship is indicated, with a three (3) a strong relationship is indicated, while in cells with a zero (0), there is no relationship. In this way, the interpretation of the matrix of direct influence/dependence is carried out considering these values assigned by the experts.

Figure 1. Matrix of direct influence/ dependence

Influence ↗	TM	TS	PI	SD	ED	CD	IPSWB	IWBPE	FT	SDT	SLT	ICETS	AEMCV	CPWB
TM	0	3	3	0	0	2	0	2	0	3	0	0	0	0
TS	3	0	2	3	3	2	2	3	2	2	3	2	2	2
PI	2	3	0	2	1	2	2	3	3	3	3	2	3	2
SD	3	2	2	0	3	3	3	2	3	2	2	2	2	3
ED	0	2	3	0	0	0	3	2	2	2	0	0	0	3
CD	3	3	2	3	2	0	2	2	3	2	3	3	2	2
IPSWB	0	3	3	0	0	0	0	3	3	2	0	0	0	3
IWBPE	2	3	3	2	2	3	3	0	2	2	3	2	2	3
FT	1	1	2	0	1	3	2	3	0	3	3	0	0	2
SDT	3	2	3	3	3	3	3	2	0	0	2	2	2	2
SLT	2	3	2	2	2	3	3	2	3	3	0	2	2	2
ICETS	3	3	2	0	3	3	3	2	3	2	3	0	0	3
AEMCV	3	3	2	1	3	3	3	2	3	2	3	2	0	2
CPWB	3	2	2	0	3	0	1	3	1	2	3	0	0	0

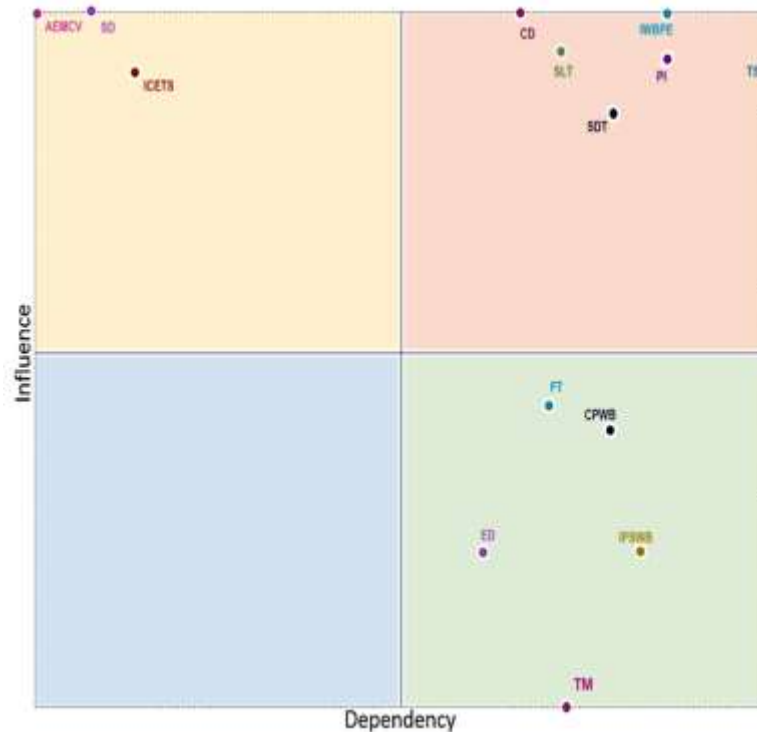
Source: Authors

After completing the matrix with its respective values, the classification was carried out, and, consequently, the arrangement of each variable in one of the four quadrants of the plane of direct influence/dependence, as seen in Figure 2. The structural analysis highlighted the presence of six driving or key variables located in the first quadrant (upper right corner): CD (Cognitive Dimension), IWBPE (Influence of Well-being on Pedagogical Effectiveness), SLT (Social Learning Theory), SDT (Self-Determination Theory), PI (Pedagogical Innovations), and TS (Teaching Style).

In the second quadrant (upper left corner), three determinant or high-impact variables were identified: AEMCV (Adaptation of educational methods to cultural values), ICETS (Influence of cultural expectations on teaching strategies), and SD (Social Dimension). In the third quadrant (lower left corner), considered an autonomous zone, no variables were located, which indicates that there are no low-impact or low-independence variables.

Finally, in the fourth quadrant (lower right corner), five variables were located, and identified as dependent or result: FT (Flow Theory), CPWB (Culture and Psychological Well-being), IPSWB (Impact of Pedagogical Strategies on Well-being), ED (Emotional Dimension) and TM (Traditional Methods).

Figure 2. Plane of direct influence/dependence



Source: Authors

Table 2 presents the categorization of the variables derived from the matrix of direct influence.

Table 2. Classification of factors by indirect influences dependencies

Variable type	Variables	Code
Key, strategic or challenge factors	Pedagogical Innovations.	PI
	Teaching Style	TS
	Cognitive Dimension.	CD
	Influence of Well-being on Pedagogical Effectiveness.	IWBPE
	Social Learning Theory	SLT
	Self-Determination Theory	SDT
	Social Dimension	SD

Determinant or influencing factors	Adaptation of educational methods to cultural values.	AEMCV
	Influence of cultural expectations on teaching strategies.	ICETS
Autonomous or excluded factors	-	-
Dependent or result factors	Traditional Methods.	TM
	Impact of Pedagogical Strategies on Well-being.	IPSWB
	Emotional Dimension.	ED
	Flow Theory	FT
	Culture and Psychological Well-being.	CPWB

Source: Authors

As seen in Table 2, the variable Pedagogical Innovations was classified as key due to its potentially transformative impact on the educational environment. Pedagogical innovations represent approaches and methodologies that seek to improve the quality of the teaching and learning process, introducing new strategies, technologies, or participatory approaches. According to Colombo, et al. (2021), pedagogical innovations tend to introduce relevant changes in the way in which knowledge is taught and absorbed. Its implementation can directly influence the educational experience, seeking to make it more effective, participatory, and adapted to the needs of students.

On the other hand, innovative strategies are usually designed to increase the motivation and participation of learners in the learning process. According to Shin & Bolkan (2021), this can have a direct impact on the psychological well-being of students by generating a more stimulating and rewarding educational environment. Likewise, many pedagogical innovations are aimed at developing 21st century skills, such as creativity, collaboration, and critical thinking (Haryani, et al., 2021). These skills are essential for success not only academically, but also in personal and professional life. Likewise, given their comprehensive nature, pedagogical innovations can have an impact on various variables within the educational system, including teaching strategies, the psychological well-being of learners, and the general effectiveness of the educational process.

Regarding the variable Teaching Style, it was classified as a key variable in this research due to its fundamental importance in the configuration of the educational environment and its direct influence on the learning process, the choice and application of the teaching style have significant implications for various aspects, supporting its designation as an essential variable. For example, according to De Brabander & Glastra (2021), the teaching style has a direct influence on the educational experience of students. Different styles can generate different levels of interest, participation, and understanding, ultimately impacting the psychological well-being of students.

On the other hand, the teaching style is closely linked to the pedagogical used strategies. Their conscious choice can enhance or limit the effectiveness of educational strategies, which in turn has repercussions on the quality of learning and, therefore, on psychological well-being. According to Ortan, et al. (2021), the teaching style directly impacts the relationship between teachers and students. An approach that promotes mutual understanding and collaboration can have positive effects on students' emotional and academic well-being. While for Cronin, et al. (2018), some teaching styles can facilitate the development of social and emotional skills, crucial for comprehensive psychological well-being. In summary, the variable Teaching Style is considered key due to its ability to shape the educational experience, influence the learning process, and directly affect the psychological well-being of learners.

In reference to the classification of the variable Cognitive Dimension as a key variable in this research, it is based on its central importance in the educational field and its close relationship with the intellectual and academic development of students. In this sense, according to Lachman, et al. (2015), the cognitive dimension addresses key aspects of thinking and information processing, being essential for the acquisition of academic skills and knowledge. Its understanding and development directly impact academic performance and, therefore, the psychological well-being of students. Similarly, Holmes, et al. (2021) point out that the cognitive dimension is closely linked to the ability to process information, remember and apply key concepts, and is directly related to the effectiveness of study strategies, which has an impact on psychological well-being by reducing academic stress.

On the other hand, the cognitive dimension includes skills such as analysis, synthesis, and evaluation, which are fundamental for the development of the ability to think critically and solve problems, crucial elements for psychological well-being and long-term success, it affects students' academic self-perception and not only influences academic performance but also contributes to students' preparation for their future professional roles. For these reasons, this variable was classified as key.

The classification of the variable Influence of Well-being on Pedagogical Effectiveness as a key variable is supported by the understanding of the intrinsic connection between the well-being of educational actors and the quality of the pedagogical process. The variable recognizes the bidirectional influence between the well-being of educators and the well-being of learners. The emotional connection and positive perception of the educational environment by both groups directly impact the effectiveness of teaching and learning. In this sense, Wang, et al. (2020), describe that the emotional well-being of teachers and students contributes significantly to the emotional climate of the classroom. Furthermore, the psychological well-being of students and teachers is related to the effective management of academic stress. In (Ortan, et al., 2021), it was found that teachers' satisfaction and well-being directly influence their effectiveness in teaching.

For its part, the classification of the variable Social Learning Theory as a key variable in this research is based on its fundamental relevance to understanding the interactive dynamics within the educational environment. Social learning theory highlights the influence of observation and behavioral modeling in the learning process. That is the identification of positive and negative behaviors by students, derived from pedagogical strategies, can significantly impact their well-being and the effectiveness of the educational process. According to Muir, et al. (2021), the theory recognizes the relevance of social interaction in learning, highlights the role of identification with role models in the construction of identity.

Morales-Rodríguez, et al. (2020) state that social learning theory highlights the ability of learners to learn practical skills through observing others and suggests that motivated learning and active participation are linked to greater psychological well-being and

that teachers are also influential role models. Furthermore, this theory allows for cultural adaptation of pedagogical strategies, recognizing that role models and influences vary depending on cultural context. This cultural adaptation can improve the resonance of strategies with students' identity and well-being.

In reference to the variable Self-Determination Theory, it is classified as key due to its essential role in understanding and promoting intrinsic motivation, autonomy, and competence in the educational context. Its direct influence on the psychological well-being of students and the effectiveness of pedagogical strategies position it as a critical variable in research. According to Vasconcellos, et al. (2020), this theory addresses the importance of intrinsic motivation, which is essential for active and sustained engagement in the learning process. Self-determined motivation is positively linked to psychological well-being and academic performance.

While Ryan & Deci (2020) state that this theory highlights the need to promote autonomy and competence in learning and not only focuses on the academic field but also recognizes its impact on the comprehensive development of students. In this sense, an educational environment that respects self-determination and promotes the development of competent skills contributes to student well-being and greater pedagogical effectiveness. In addition, it facilitates autonomy in decision-making, strengthens self-esteem, and contributes to an enriching and positive educational experience.

Continuing with the classification, it is the turn of the variables that were classified as determinant or highly influential. In this case, Social Dimension was classified as a determinant variable due to its significant importance in the educational environment, but with less interdependence with other variables. In this sense, Kiuru, et al. (2020), state that the social dimension significantly impacts the quality of interpersonal relationships and the social well-being of students. Its influence is broad and covers various aspects of the educational environment, contributing to a positive classroom climate.

On the other hand, although crucial, the social dimension shows less dependence on other variables identified in the study. Its positive effect on relationships and social well-being is not strongly conditioned by specific factors, which makes it less interdependent

compared to other variables. Mystakidis, et al. (2021) state that the social dimension can have a significant impact autonomously since it is linked to the intrinsic nature of social interactions in the educational environment. Its influence is not limited by other variables substantially, which supports its classification as a low dependency in this context.

The variable Adaptation of educational methods to cultural values was classified as a determinant because it has a considerable impact on the effectiveness of teaching, promoting cultural relevance and inclusion. Its influence is significant but is not strongly conditioned by other variables identified in this study. Its positive impact on cultural adaptation and connection with students does not depend largely on other specific variables. Chen, et al. (2021) state that this variable can exert an important influence autonomously, contributing to the creation of a culturally sensitive educational environment. Given that adaptation to cultural values addresses a diversity of cultural contexts, its impact is not strongly conditioned by specific factors identified in the study, which supports its classification as low dependence in this context.

Regarding the variable Influence of cultural expectations on teaching strategies, it was classified as a determinant because, first of all, the substantial cultural impact: the influence of cultural expectations on teaching strategies has a substantial impact on pedagogical effectiveness by aligning educational practices with cultural norms and values. According to Banks (2015), its influence is significant, encompassing cultural adaptation in the teaching process.

Secondly, independence in cultural adaptation: its positive impact on cultural adaptation and the improvement of teaching strategies is not strongly conditioned by other specific variables identified in the study. According to Lamm, et al. (2018), this variable can exert an important influence autonomously, contributing to a culturally sensitive pedagogical approach. Finally, since the variable addresses the diversity of cultural expectations, its impact is not strongly conditioned by specific factors identified in the study, which supports its classification as low dependence in this context.

Continuing with the classification, variables were not classified as autonomous, this may be due to the complexity of the System: In some studies, especially in complex environments such as

education, all variables can have a certain degree of impact and interdependence. The omission of low-impact, low-dependency variables could suggest that even variables considered less critical still have some degree of influence on the system.

For their part, the variables identified as results were five (5): starting with the variable Traditional Methods, which was classified as such in this research due to the low impact on innovative adaptation, that is, the traditional methods, by following conventional and established practices tend to have a limited impact on adapting to innovative approaches. Their influence is less significant compared to more innovative pedagogical strategies, which positions them as having a low impact on the continuous improvement of the educational process.

On the other hand, according to Li, et al., (2021), the effectiveness of traditional methods can largely depend on the simultaneous implementation of innovative pedagogical strategies. Their impact is enhanced when they are combined with more modern and adaptive approaches, which suggests a high dependence on other strategies to improve their effectiveness. In this sense, the variable Traditional Methods may require the complementarity of more advanced strategies to effectively address contemporary educational demands. Their high dependency means that their impact is maximized when integrated with more modern and adaptive pedagogical approaches.

Regarding the Impact of Pedagogical Strategies on Well-being, it was classified as a result variable because, although pedagogical strategies play an important role in the educational process, their direct impact on the psychological well-being of students may be limited compared to other variables more directly linked to emotional and social well-being. In this sense, Zee & Koomen (2016) state that the effectiveness of pedagogical strategies to improve well-being may depend largely on their integration with other variables. Its influence may be more noticeable when considered in conjunction with factors such as teaching style, cultural expectations, and cognitive and social dimensions. While Ortan & Simut (2021) point out that the impact of pedagogical strategies on well-being may vary depending on the educational context and how they are implemented.

The Emotional Dimension was classified as a result variable because, although the emotional dimension is essential for psychological well-being, its direct impact on the effectiveness of pedagogical strategies may be limited. Pedagogical strategies can influence well-being, but the emotional dimension may not be the main variable in that relationship. However, Wang, et al. (2020) state that students' emotional well-being can largely depend on the effective implementation of pedagogical strategies and the emotional climate of the classroom. That is, the high dependence suggests that the emotional dimension is significantly influenced by the quality of the pedagogical strategies and the emotional environment created in the classroom. On the other hand, the emotional dimension is closely interconnected with other identified variables, such as teaching style, pedagogical strategies, and psychological well-being in general.

The Flow Theory, for its part, was classified as a result variable because, although this variable addresses the optimal experience and total commitment in activities, its direct impact on the variables identified in the study, such as pedagogical strategies, emotional and social well-being, may not be as pronounced. Its influence may be more related to the subjective experience of students than to specific measurable outcomes. According to Eggers, et al. (2021), flow theory can largely depend on the quality of the pedagogical strategies implemented and the educational environment in general. Its influence may be more noticeable when it is integrated and appropriately adapted to the learning context, suggesting a strong dependence on external factors. Similarly, Pavlas (2010) states that the flow experience may be more conditioned by the adaptation of the educational environment and pedagogical strategies than by intrinsic characteristics. Its dependence highlights the importance of carefully considering the context in which it is implemented to maximize its impact.

Finally, Culture and Psychological Well-being was classified as a result variable because, although culture plays a crucial role in shaping experiences and well-being, its direct impact on pedagogical strategies and psychological well-being can be less obvious. Their influence may be more indirect and linked to the way strategies and practices are culturally adapted. However, Katsantonis (2020) states that the contribution of culture to psychological well-being can depend significantly on the

implementation of pedagogical strategies that are culturally sensitive and adaptable. High dependency highlights the need to consider cultural diversity and adapt educational practices accordingly. Likewise, this variable may be closely linked to other cultural variables identified in the study, such as cultural expectations and the adaptation of educational methods to cultural values.

CONCLUSIONS

Based on the analysis carried out, this study provides a comprehensive view of the relationships between pedagogical strategies, psychological well-being, and cultural factors in the educational environment. Key variables were identified, such as Self-Determination Theory and the Adaptation of educational methods to cultural values, highlighting their fundamental role. The pedagogical strategies, although essential, revealed a diverse influence on psychological well-being, emphasizing the importance of adapting them to cultural diversity to maximize their effectiveness. Culture, as a crucial component, was shown to be a significant factor in shaping psychological well-being, especially when integrated with cultural sensitivity.

Likewise, this study highlights the need for an integrated approach that considers both pedagogical strategies and cultural diversity to improve the psychological well-being of learners. Self-Determination Theory and Cultural Adaptation emerged as central factors, providing valuable guidance for more effective educational practices. Taken together, this study contributes to the comprehensive understanding of the dynamics between pedagogical strategies, psychological well-being, and culture in education. The conclusions offer a valuable basis for improving educational practices, although the need for future research is recognized for a more complete and applicable understanding.

References

- Alam, A. (2021). Should robots replace teachers? Mobilisation of AI and learning analytics in education. . International Conference on Advances in Computing, Communication, and Control (ICAC3) IEEE., 1-12.

- Arango, X., & Cuevas, V. (2014). Método de análisis estructural: matriz de impactos cruzados multiplicación aplicada a una clasificación (MICMAC) . (Doctoral dissertation, Tirant Lo Blanch).
- Bandura, A. (2019). The social learning theory of aggression. . Routledge. In *The War System*, 141-156.
- Banks, J. (2015). Cultural diversity and education: Foundations, curriculum, and teaching. . Washington: Routledge.
- Chen, X., Dewaele, J., & Zhang, T. (2021). Sustainable development of EFL/ESL learners' willingness to communicate: the effects of teachers and teaching styles. *Sustainability*, 14(1), 396.
- Colombo, M., Foss, N., Lyngsie, J., & Lamastra, C. (2021). What drives the delegation of innovation decisions? The roles of firm innovation strategy and the nature of external knowledge. *Research Policy*, 50(1), , 104134.
- Cronin, L., Allen, J., Mulvenna, C., & Russell, P. (2018). An investigation of the relationships between the teaching climate, students' perceived life skills development and well-being within physical education. . *Physical Education and Sport Pedagogy*, Cronin, L. D., Allen, J., Mulvenna, C., & Russell, P. (2018). An investigation of the relationships between the teaching climate, students' perceived life skills 181-196.
- De Brabander, C., & Glastra, F. (2021). The unified model of task-specific motivation and teachers' motivation to learn about teaching and learning supportive modes of ICT use. *Education and Information Technologies*, 26, 393-420.
- Eggers, J., Oostdam, R., & Voogt, J. (2021). Self-regulation strategies in blended learning environments in higher education: A systematic review. *Australasian Journal of Educational Technology*, 37(6), 175-192.
- Frenzel, A., Daniels, L., & Burić, I. (2021). Teacher emotions in the classroom and their implications for students. *Educational Psychologist*, 56(4), 250-264.
- Gay, G. (2018). Culturally responsive teaching: Theory, research, and practice. . New York: Teachers college press.
- Haryani, E., Coben, W., Pleasants, B., & Fetters, M. (2021). Analysis of Teachers' Resources for Integrating the Skills of Creativity and Innovation, Critical Thinking and Problem Solving, Collaboration, and Communication in Science Classrooms. *Jurnal Pendidikan IPA Indonesia*, 10(1), 92-102.

- Holmes, J., Guy, J., Kievit, R., Bryant, A., Mareva, S., Gathercole, S., & CALM Team. (2021). Cognitive dimensions of learning in children with problems in attention, learning, and memory. . *Journal of Educational Psychology*, 113(7), 1454.
- Katsantonis, I. (2020). Factors Associated with Psychological Well-Being and Stress: A Cross-Cultural Perspective on Psychological Well-Being and Gender Differences in a Population of Teachers. *Pedagogical Research*, 5(4).
- Kiuru, N., Wang, M., Salmela-Aro, K., Kannas, L., Ahonen, T., & Hirvonen, R. (2020). Associations between adolescents' interpersonal relationships, school well-being, and academic achievement during educational transitions. *Journal of youth and adolescence*, 49, 1057-1072.
- Lachman, R., Lachman, J., & Butterfield, E. (2015). *Cognitive psychology and information processing: An introduction*. . Psychology Press.
- Lamm, B., Keller, H., Teiser, J., Gudi, H., Yovsi, R., & Lohaus, A. (2018). Waiting for the second treat: Developing culture-specific modes of self-regulation. *Child development*, 89(3), e261-e277.
- Li, Q., Li, Z., & Han, J. (2021). A hybrid learning pedagogy for surmounting the challenges of the COVID-19 pandemic in the performing arts education. *Education and Information Technologies*, 26(6), 7635-7655.
- Manasia, L. P.-b.-4., Manasia, L., Pârvan, A., & Macovei, M. (2020). Towards a model of teacher well-being from a positive emotions perspective. *European Journal of Investigation in Health, Psychology and Education*, 10(1), 469-496.
- Morales-Rodríguez, F., Espigares-López, I., Brown, T., & Pérez-Mármol, J. (2020). The relationship between psychological well-being and psychosocial factors in university students. *International journal of environmental research and public health*, 17(13), 4778.
- Morales-Rodríguez, F., Espigares-López, I., Brown, T., & Pérez-Mármol, J. (2020). The relationship between psychological well-being and psychosocial factors in university students. *International journal of environmental research and public health*, 17(13), 4778.
- Muir, C., Dörnyei, Z., & Adolphs, S. (2021). Role models in language learning: Results of a large-scale international survey. *Applied Linguistics*, 42(1), 1-23.
- Mystakidis, S., Berki, E., & Valtanen, J. (2021). Deep and meaningful e-learning with social virtual reality environments in higher

- education: A systematic literature review. *Applied Sciences*, 11(5), 2412.
- Ortan, F., & Simut, R. (2021). Self-efficacy, job satisfaction and teacher well-being in the K-12 educational system. *International journal of environmental research and public health*, 18(23), 12763.
- Ortan, F., Simut, C., & Simut, R. (2021). Self-efficacy, job satisfaction and teacher well-being in the K-12 educational system. *International journal of environmental research and public health*, 18(23), 12763.
- Ortan, F., Simut, C., & Simut, R. (2021). Self-efficacy, job satisfaction and teacher well-being in the K-12 educational system. *International journal of environmental research and public health*, 18(23), 12763.
- Pavlas, D. (2010). A model of flow and play in game-based learning the impact of game characteristics, player traits, and player states. *Electronic Theses and Dissertations*.
- Piniel, K., & Albert, A. (2019). Motivation and flow. . *The Palgrave handbook of motivation for language learning*, 579-597.
- Ryan, R., & Deci, E. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford publications.
- Ryan, R., & Deci, E. (2020). Intrinsic and extrinsic motivation from a self-determination theory perspective: Definitions, theory, practices, and future directions. *Contemporary educational psychology*, 61, 101860.
- Sandelowski, M. (2000). Combining qualitative and quantitative sampling, data collection, and analysis techniques in mixed-method studies. *Research in nursing & health*, 23(3), 246-255.
- Seeram, E. (2019). An overview of correlational research. . *Radiologic technology*, 91(2), 176-179.
- Shin, M., & Bolkan, S. (2021). Intellectually stimulating students' intrinsic motivation: the mediating influence of student engagement, self-efficacy, and student academic support. *Communication Education*, 70(2), 146-164.
- Simmons, M., McDermott, M., Lock, J., Crowder, R., Hickey, E., DeSilva, N., & Wilson, K. (2019). When Educators Come Together to Speak About Well-Being. *Canadian Journal of Education/Revue canadienne de l'éducation*, 42(3), 850-872.

- Swedberg, R. (2020). Swedberg, R. (2020). Exploratory research. The production of knowledge: Enhancing progress in social science,. United Kindom.
- Vasconcellos, D., Parker, P., Hilland, T., Cinelli, R., Owen, K., Kapsal, N., & Lonsdale, C. (2020). Self-determination theory applied to physical education: A systematic review and meta-analysis. *Journal of educational psychology*, 112(7), 1444.
- Wang, M., Degol, J., Amemiya, J., Amemiya, J., Parr, A., & Guo, J. (2020). Classroom climate and children's academic and psychological wellbeing: A systematic review and meta-analysis. . *Developmental Review*, 57, 100912.
- Wang, M., Degol, J., Amemiya, J., Parr, A., & Guo, J. (2020). Classroom climate and children's academic and psychological wellbeing: A systematic review and meta-analysis. *Developmental Review*, 57, 100912.
- Wang, M., Degol, J., Amemiya, J., Parr, A., & Guo, J. (2020). Classroom climate and children's academic and psychological wellbeing: A systematic review and meta-analysis. . *Developmental Review*, 57, 100912.
- Zee, M., & Koomen, H. (2016). Teacher self-efficacy and its effects on classroom processes, student academic adjustment, and teacher well-being: A synthesis of 40 years of research. *Review of Educational research*, 86(4), 981-1015.