Cakrawala Pendidikan
Jurnal Ilmiah Pendidikan
Vol. 44 No. 3, October 2025, pp.473-484
https://journal.uny.ac.id/index.php/cp/issue/view/2958
DOI: https://doi.org/10.21831/cp.v44i3.79882

Knowledge and attitudes towards special educational needs: A study with future teachers

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ABSTRACT

The training of teachers is continually adapting to the needs demanded by today's society. Special educational needs (SEN) currently represent a challenge that future teachers must approach with favourable attitudes and a willingness to engage. The aim of this study is to assess the impact of knowledge in inclusive education on attitudes towards special educational needs among university students. The research employs a cross-sectional and explanatory design, involving 406 university students from teacher training programmes in Peru. Data were collected using the Inclusive Education Questionnaire and the Attitude Scale towards the Inclusion of Students with SEN, both of which demonstrated adequate validity and reliability indices. The results confirm that teachers' attitudes towards special educational needs are positively and significantly affected by knowledge of the definition and characteristics of inclusive education ($\beta = 0.438$, $p < 0.05$), the importance of this knowledge ($\beta = 0.139$, $p < 0.05$), and knowledge of children's disabilities ($\beta = 0.388$, $p < 0.05$). In conclusion, attitudes can be explained through the knowledge acquired by university students during their professional training. Therefore, teacher education in pedagogy is essential for improving the quality of inclusive education in basic education schools.

Keywords: student attitude, educational needs, disability, knowledge, teacher

Article history

Received:	*Revised:*	*Accepted:*	*Published:*
07 December 2024	*12 June 2025*	*11 September 2025*	*03 October 2025*

Citation (APA Style): Chura-Quispe, G., Vargas-Fuentes, J. A., Padilla Díaz, O. E., Laura-De La Cruz, B. D., Copaja, R. V., & Caballero, P. R. N. (2025). Knowledge and attitudes towards special educational needs: A study with future teachers. *Cakrawala Pendidikan: Jurnal Ilmiah Pendidikan, 44*(3), pp.473-484. DOI https://doi.org/10.21831/cp.v44i3.79882

INTRODUCTION

Special educational needs (SEN) encompass a wide range of physical, cognitive, and socio-emotional disabilities or difficulties that require varying levels of support for students to access a relevant education (Dalgaard et al., 2021). This implies that not all students with SEN require the same type of intervention, highlighting the need to personalise support according to the individual characteristics of each student. In this regard, having well-informed education professionals with practical experience in the field could lead to attitudes that enable more effective decision-making to provide quality support to students (Lautenbach, 2019).

Although between 65% and 83% of students in situations of care or special need receive additional support related to special educational needs at some point during their academic training (Jay & Gilbert, 2021), they generally attain lower educational levels compared to those without such conditions and, consequently, face a higher risk of social exclusion (Ugalde et al., 2021). Therefore, inclusive education poses the challenge and goal of integrating students with SEN into regular classrooms, promoting their participation and reducing levels of exclusion (Dalgaard et al., 2021). One of the main requirements for achieving this is the involvement of teachers who are willing to support them. While peers who have had prior experiences with

individuals with disabilities exhibit positive attitudes towards students with SEN, contributing to improved socialisation and maintaining an appropriate school climate (Lanes et al., 2020), the role of teachers is to manage and focus learning towards achieving competencies. In line with these findings, research in the context of Indonesian higher education also indicates that students' knowledge of inclusive education is positively correlated with attitudes towards individuals with special needs, although the strength of the correlation is moderate (Evanjeli, 2021).

Pedagogy students who are being trained as future teachers in Austrian institutions that promote inclusion within their curricula exhibit more positive attitudes toward inclusion (Schwab et al., 2024), since the strengthening of research knowledge and skills motivates them to further develop their professional competences in order to provide greater support for diverse learning needs (Chura-Quispe et al., 2024). Thus, universities are responsible for training education professionals by strengthening the curriculum and practice that enables them to address the needs of students with SEN (Rojo-Ramos et al., 2020). Studies in Indonesia also show that cross-disciplinary collaboration in inclusive education courses can increase pre-service teachers' self-efficacy in managing inclusive classrooms (Pujaningsih & Ambarwati, 2020).

In schools, teachers generally have positive attitudes, but this is often influenced by cultural and demographic factors (van Steen & Wilson, 2020); others attribute it to training, experience, and contact with the students they have (de Boer et al., 2011; Lacruz-Pérez et al., 2021). Prospective teachers exhibit variability in their interaction with students with SEN, as those in advanced cycles have more experience during their training than those at the beginning of their education.

University training in inclusive education is crucial for preparing future teachers to practise, yet teacher candidates often lack a deeper understanding of the relationship between special education and inclusion (Miškolci et al., 2021). This scenario influences the attitude of future teachers when facing real situations (Crisol-Moya et al., 2023). Both primary and secondary education teachers perceive their initial training as insufficient for the diversity of students, although continuous training has improved inclusive education (Triviño-Amigo et al., 2022). The closer students are to information about inclusive education or SEN, the better their attitudes and responses will be in real situations.

The Group for Analysis and Development (Cueto et al., 2018) indicates that in Peru, approximately 50% of school-aged students with special educational needs (SEN) attend school, although only a small percentage manage to continue their education into secondary school. Regulations in Peru establish that inclusion must be a priority, encompassing all individuals with disabilities. The General Education Law No. 28044 of 2003 states that inclusion should incorporate persons with disabilities without distinction, aiming to eliminate poverty, exclusion, and social inequality. Consequently, the Peruvian state is responsible for implementing educational reforms that guarantee attention to diversity as part of the right to promote equal opportunities (Escalante et al., 2022; Calderón, 2023).

Furthermore, Law 29973, the “General Law on Persons with Disabilities,” stipulates in Article 37 that educational institutions must implement methodological and curricular adaptations, as well as reasonable adjustments, to ensure access and retention for students with disabilities. Additionally, Article 39 expresses that higher education institutions (both public and private), including universities and technical institutions, must include subjects on disability in their training programmes across various disciplines such as education, law, medicine, psychology, administration, architecture, engineering, economics, accounting, and social work. Thus, university students aspiring to become teachers are in a continuous process of training to acquire competencies that will enable them to face this new scenario. From the perspective of inclusive education, teachers and future teachers must adjust their methodologies, strategies, and resources according to the needs of their students (Ministry of Education, 2016). Therefore, it is essential to identify the training of future teachers, who will assume an indispensable role in promoting inclusive education (Rojas-Salgado, 2023; Santa-Cruz, 2023).

Evidence from a synthesis of 15 studies conducted across different countries suggests that the majority of teachers reported negative attitudes toward the inclusion of students with emotional and behavioral difficulties (Gidlund, 2018; Kotor et al., 2022). General education

teachers exhibit fewer positive attitudes towards inclusion than special education teachers, partly due to their lower sense of efficacy (Desombre et al., 2018) or the lack of training, experience (Al Shoura & Ahmad, 2020), and educational resources (Alsolami & Vaughan, 2023). Their self-efficacy beliefs may influence concerns about their work with students with special educational needs (Savolainen et al., 2020), but they can also mediate the relationship between knowledge, school support, and attitudes towards inclusion (Werner et al., 2021). Teacher training is strengthened from the university stage, and at the same time, universities play an explicit role in providing propositional knowledge about special educational needs in teacher training for inclusion (Mintz, 2022).

Knowledge of inclusion policies and instructional strategies could positively impact the self-efficacy and attitudes of future teachers (Werner et al., 2021; Alsarawi & Sukonthaman, 2021). While normative aspects are important, disciplinary knowledge cannot be overlooked as a causal element of attitude. For instance, some studies have explored that knowledge of attention deficit hyperactivity disorder can foster a more positive attitude among teachers towards students with these conditions (Toye et al., 2018). The quality of training represents another aspect to consider when evaluating attitudinal aspects towards special educational needs (Fernandez et al., 2023; Rojo-Ramos et al., 2020) and varies according to the severity of the needs, with students presenting emotional or behavioural issues being of greater concern than those with intellectual disabilities (Avramidis et al., 2000; Hastings & Oakford, 2010; Avramidis et al., 2010). The role of teachers is focused on detecting and providing support for these disabilities during the teaching-learning process.

Working with students with special educational needs is strongly influenced by the attitudes of teachers, which are affected by their initial training and lack of experience in this area. Peruvian studies have indicated inadequate preparation of teachers (Bazurto-Ordoñez and Samada-Grasst, 2021), due to outdated curricula. Strengthening the inclusive competencies of future teachers (Mejillones, 2023) and the experience reflected through their self-efficacy are substantial aspects that maintain a favourable attitude for the success of the teaching and learning process (Koliqi and Zabeli, 2022). Therefore, identifying the effectiveness of training, courses, workshops, or ongoing education for students (Sevilla et al., 2018) in shaping the attitudes of trainee teachers is essential.

Knowledge of the various educational needs and support strategies constitutes a fundamental pillar for promoting relevant practices (Lautenbach and Heyder, 2019). Although future Peruvian teachers face established political guidelines for inclusive education, it seems to be a challenge to overcome the barriers to real and effective inclusion from their professional training (Escarbajal et al., 2023). Therefore, it is essential to begin demonstrating concern for inclusive demands from university training, responsible for preparing competent and sensitive professionals who commit to implementing actions aimed at improving support for disabilities (Vallejos García and Castro Durán, 2023). This analysis would not only contribute to enriching the academic discourse surrounding inclusive education but could also offer valuable recommendations for implementing educational programmes that foster greater awareness and understanding of the realities faced by students with special needs.

This study is based on Ajzen's Theory of Planned Behaviour (1991), which explains that attitudes towards behaviour represent one of three components, along with subjective norms and perceived behavioural control, that increase the likelihood of performing a behaviour. Furthermore, the behaviours exhibited by teachers towards inclusive education are influenced by behavioural intention, that is, by attitudes (Yan & Sin, 2014). It is also grounded in Bandura's self-efficacy theory, which explores the willingness of teachers to implement inclusive strategies tailored for students with special educational needs (Chhreti et al., 2020). In this sense, teachers' beliefs about inclusive education can affect their pedagogical practice, classroom climate, and the development of an inclusive environment. Both theories constitute a comprehensive framework that allows for understanding the relevance of knowledge about inclusive education in the attitudes that future teachers may present.

Considering the above, it is imperative that the training of future teachers includes a solid understanding of special educational needs (SEN), not only to avoid misdiagnoses but also to

cultivate inclusive attitudes that promote an educational environment that values and appropriately responds to diversity. The present study aims to determine the impact of knowledge in inclusive education on attitudes towards special educational needs among future Peruvian teachers. To this end, the following hypotheses are proposed (see figure 1):

H1: There is a positive and significant influence between knowledge of the definition and characteristics of special educational needs and attitudes towards special educational needs.

H2: There is a positive and significant influence between knowledge of the importance of inclusive education and attitudes towards special educational needs.

H3: There is a positive and significant influence between knowledge of disabilities in children and attitudes towards special educational needs.

METHOD

A cross-sectional explanatory study was conducted, which included latent and observable variables, represented through a structural equation model (Ato et al., 2013). The number of participants was determined using Soper software, which considers both observed and latent variables in structural equation models (SEM). The calculation considered an anticipated effect size ($\lambda = 0.1$), statistical power levels ($1 - \beta = 0.95$), and a desired significance level ($\alpha = 0.05$), identifying a minimum required sample of 328 (Soper, 2024). Ultimately, a total of 406 university students aspiring to become teachers participated in the study, exceeding the minimum requirement. They were selected through a convenience sampling method, with voluntary participation facilitated by obtaining informed consent from everyone. The majority of participants were female (47.04%), first-year students (52.71%), and specialised in Language and Literature (33.25%). Additionally, the average age of participants was 21.06, with a standard deviation of 3.56 (see Table 1).

Table 1. Characteristics of study participants

Characteristics	n	%
Sex		
Female	191	47.04
Male	215	52.96
Year		
First	214	52.71
Second	53	13.05
Third	10	2.46
Fourth	43	10.59
Fifth	86	21.18
Specialisation		
Language and Literature	135	33.25
Foreign Language	30	7.39
Social Science	19	4.68
Mathematics, Computing and IT	60	14.78
Primary	59	14.53
Early Childhood	39	9.61
Physical Education	64	15.76
Age	ME = 21.06	DE = 3.56

The process for collecting information began with the validation of the instruments. Subsequently, requests were made to the directors of each study programme to conduct the research. Following this, information regarding the objectives and characteristics of the research was provided, emphasising the guidelines established in the Declaration of Helsinki, including the confidentiality of data, and informed consent was sought from each participant. Subsequently, the instrument was administered both in person and virtually. In the face-to-face modality, the QR code of the Google Form was printed and scanned by the students to access and complete it. In the virtual modality, the link was distributed through WhatsApp and email channels. Data collection took place between June 17 and November 10, 2024.

Two data collection instruments were employed. The first was the "Inclusive Education Questionnaire," designed by Huamaní Nolasco & Rojas Quispe (2017), which comprises 20 questions regarding knowledge of the definition and characteristics of inclusive education (6 items), knowledge of the importance of inclusive education (7 items), and knowledge of disabilities in children (7 items). These items were developed based on Vygotsky's constructivist theory, regulations, curricular adaptations, and the SAANEE (Support and Advice Service for Special Educational Needs) regarding inclusive education. Each item has 5 response options, of which 4 are incorrect (0) and one is correct (1). Furthermore, the instrument has evidence of content validity, evaluated by 3 expert judges in inclusive education, with a score exceeding 0.70. Additionally, for this study, the difficulty index (p) and discrimination index (D) of the items were identified. All items exhibited scores indicating that the majority of items had an adequate or relatively difficult level of difficulty (p = 0.401 and 0.778), and the items showed excellent discrimination scores (D = 0.414 and 0.571) (Gómez López et al., 2020). The instruments also possess construct validity, which is detailed in the results section (Table 1 and Figure 2). Moreover, the Kuder-Richardson value was identified, with scores exceeding 0.7, indicating that the instrument has adequate reliability indices.

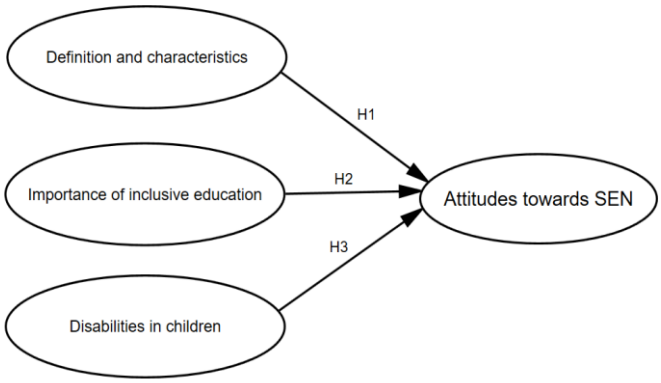

Figure 1. Theoretical Study Model and Research Hypothesis
Note: Each exogenous variable constitutes specific knowledge

The second instrument used was the "Attitudes Towards the Inclusion of Students with Special Educational Needs Scale," adapted by Tárraga Mínguez et al. (2013) from the Opinions Relative to Integration of Students with Disabilities scale by Antonak & Larrivee (1995). This instrument consists of 23 items distributed across five dimensions: benefits of inclusion (9 items), generalist vs. specialist support (4 items), methodology and behaviour management in the classroom (4 items), teacher effort and dedication towards students with special educational needs (3 items), and training and competence (3 items). It also utilises a Likert scale from 1 to 5, where 1 = strongly agree and 5 = strongly disagree, with 10 items evaluated inversely and 13 directly. The instrument has evidence of validity and reliability.

Initially, the analysis of the structure of the instruments "Inclusive Education Questionnaire" and "Attitudes Towards the Inclusion of Students with Special Educational Needs Scale" were conducted through confirmatory factor analysis (CFA), assuming the factors theoretically constructed by the authors. The dichotomous and ordinal nature of the study variables was considered, thus employing tetracoric and polychoric correlation matrices, as well as the Weighted Least Squares Mean and Variance adjusted (WLSMV) estimator, which is used for categorical instruments (Li, 2016). Factor loadings ($\lambda > 0.5$) were analysed, and fit indices were interpreted, including chi-square (χ^2), degrees of freedom (DF), Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Standardised Root Mean Square Residual (SRMR) (P. Kline, 2014).

Subsequently, the theoretical model was analysed using the Maximum Likelihood Estimation Method with Robust Standard Errors (MLR), which is employed for numerical data and is based on a normal theory method corrected for robust standard errors and corrected test statistics (R. B. Kline, 2016). The fit indices evaluated were CFI > 0.90, RMSEA < 0.080, and

SRMR < 0.080 (Hu & Bentler, 1998). The analysis of internal consistency was conducted using Cronbach's Alpha coefficient.

The programmes used for descriptive and sociodemographic analysis were the Statistical Package for Social Sciences (SPSS) version 27.0. For the validation processes with CFA, R Studio 2024.4.1 was utilised, along with the Lavaan and semPlot libraries (Epskamp et al., 2022; Rosseel, 2012).

FINDINGS AND DISCUSSION

Findings

Table 2 presents the fit indices of the instruments used for data collection. It is evident that there is sufficient evidence to confirm that the model for the EKIE assesses future teachers' knowledge of inclusive education, $\chi^2(167) = 3.158$, CFI = 0.969, TLI = 0.964, RMSEA = 0.073, SRMR = 0.079. Similarly, the evidence reported by the QASEN also indicates adequate fit indices, $\chi^2(220) = 6.822$, CFI = 0.951, TLI = 0.943, RMSEA = 0.120, SRMR = 0.067. This confirms that both instruments possess adequate validity and reliability indices.

Table 2. Fit indices of the data collection instrument

Modelos	$\chi 2$	DF	CFI	TLI	RMSEA	SRMR
EKIE	527.401	167	.969	.964	.073	.079
QASEN	1.500.902	220	.951	.943	.12	.067

Note: EKIE: Examination of Knowledge in Inclusive Education; QASEN: Questionnaire on Attitudes towards Special Educational Needs

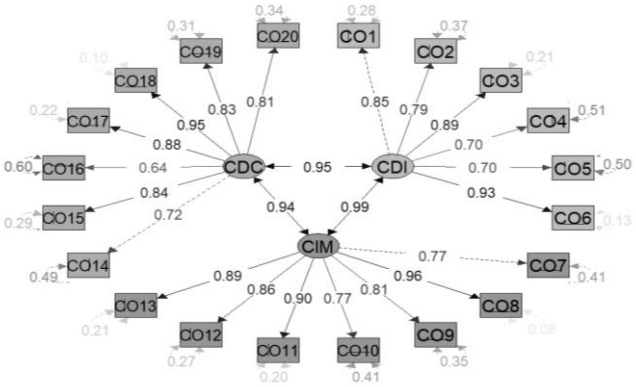

Figure 2. Path Diagram of the Examination of Knowledge in Inclusive Education

Note: CDI = Knowledge of Definition and Characteristics, CIM = Knowledge of the Importance of Inclusive Education, CDC = Knowledge of Children's Disabilities

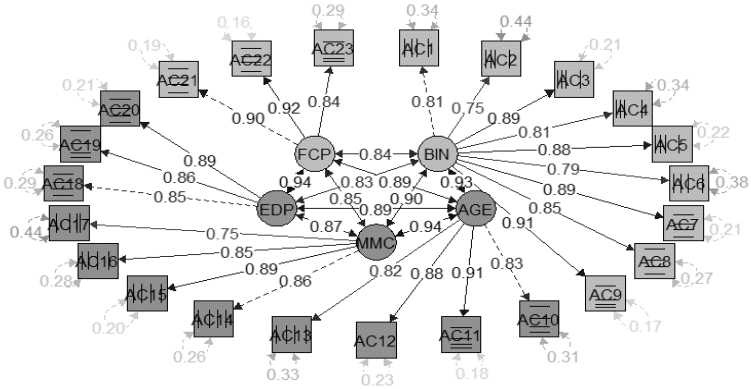

Figure 3. Path Diagram of the Questionnaire on Attitudes towards Special Educational Needs

BIN = Benefits of Inclusion, AGE = Generalist vs Specialist Support, MMC = Methodology and Behaviour Management in the Classroom, EDP = Effort and Dedication of Teachers towards Students with Special Educational Needs, FCP = Training and Competence of Teachers

Figures 2 and 3 present the factor loadings identified in each of the measurement instruments. The factor weights in the first instrument indicate scores ranging from 0.64 to 0.95 (CDC), from 0.70 to 0.93 (CDI), and from 0.77 to 0.90 (CIM), while in the second instrument, it is noted that the weights vary between 0.84 and 0.92 (FCP), 0.75 and 0.88 (BIN), 0.82 and 0.91 (AGE), 0.75 and 0.89 (MMC), and 0.85 and 0.89 (EDP). This indicates that both instruments possess relevant factor weights, as they are all above 0.5.

Table 3 presents the correlations between the variables of the measurement model, which indicates that there are significant correlations among the constructs ($p < 0.05$). Furthermore, it is evident that there is a negative skew in all cases. Regarding the alpha value, the internal consistency is found to be between 0.82 and 0.99.

Table 3. Descriptive statistics, internal consistency, and correlations

Variables	M	DE	A	α	1	2	3	4
1. Definition and Characteristics	4.02	1.95	-0.75	.80	-			
2. Importance of Inclusive Education	5.07	2.29	-1.00	.86	.826**	-		
3. Disabilities of Children	4.44	2.26	-0.53	.82	.779**	.788**	-	
4. Attitudes towards SEN	13.53	6.04	-0.80	.99	.843**	.799**	.829**	-

Note: The presented correlations are statistically significant ($p < 0.001$)

The analysis of the theoretical model indicates that there is a good fit, $\chi(17) = 7.747$, $p < .001$, CFI = .935, RMSEA = .129 [RMSEA 95% CI .113-.145], SRMR = 0.03. Furthermore, the findings confirm that knowledge of definitions and characteristics of inclusive education ($\beta = .438$, $p > .05$), knowledge of the importance of inclusive education ($\beta = .139$, $p > .05$), and knowledge of children's disabilities ($\beta = .388$, $p > .05$) influence attitudes towards special educational needs. The model incorporating these three knowledge areas explains 81% of the variability.

Table 4. Research hypotheses and their direct effects

Model	*β*	*p*	SE	EV
CDC -> Attitude	.438	.000	.18	.81
CIM -> Attitude	.139	.013	.214	
CDI -> Attitude	.388	.000	.256	

Note: SE: Standard error, EV: Explained variability

Table 4 presents the results of hypothesis testing showing the direct influence of the three knowledge domains on attitudes toward SEN. All hypotheses (H1, H2, H3) were proven significant, with knowledge of the definition and characteristics of inclusive education showing the strongest influence ($\beta = .438$). The theoretical model underpinning these relationships is visualized in Figure 4.

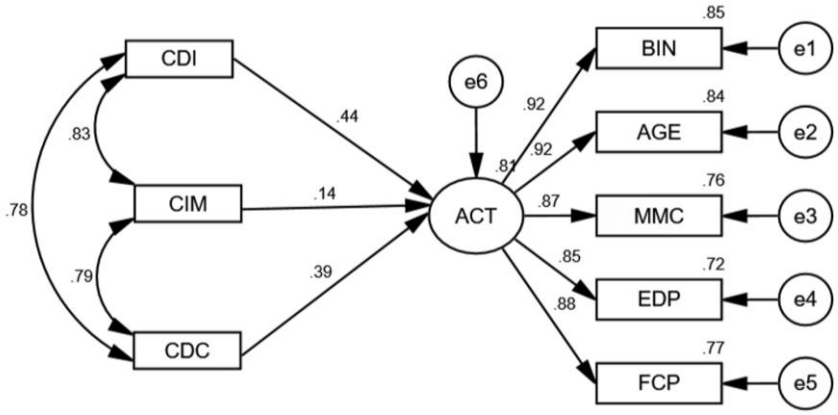

Figure 4. Diagram of the Hypothesised Model

Discussion

For future teachers, a positive attitude towards special educational needs is essential, as it reflects a willingness to adapt teaching methods and strategies that promote inclusiveness within classrooms.

In this regard, the present study identified that the knowledge possessed by university students aspiring to be teachers in Peru influences their attitudes towards special educational needs (SEN) during their professional practice. This study serves as an ideal threshold as it involves future professionals who are already undertaking their pre-professional internships, primarily in the public sector, where they interact with students with SEN. It was also identified that specific knowledge about definitions or characteristics of inclusive education, as well as knowledge about children's disabilities, appears to have a greater effect on attitudes than merely recognising the importance of this issue. However, the significance of the latter should not be dismissed.

Regarding Hypothesis 1 (H1), theoretical knowledge of definitions and characteristics of inclusive education influences attitudes towards special educational needs. If aspiring teachers have a solid understanding of inclusive education concepts, they are more likely to develop positive attitudes filled with empathy, tolerance, and acceptance, reducing prejudices or stigmas associated with students with SEN. Conversely, limited knowledge about teaching children with SEN could generate negative attitudes towards the inclusion of regular classrooms, so not adequately understanding these aspects could hinder academic success (Kotor et al., 2023). Therefore, interventions through teacher training programmes favour the acquisition of theoretical knowledge, as well as teaching strategies that can change attitudes (Kurniawati et al., 2016). Understanding theoretical aspects of inclusive education in the educational setting (concepts, curriculum, and characteristics) can foster a positive perception and attitude among future teachers (Werner et al., 2021; Alsarawi & Sukonthaman, 2021).

In the case of Hypothesis 2 (H2), knowledge about the importance of inclusive education influences attitudes towards SEN. This knowledge may also be attributed to experiences gained from interactions, which increases the level of importance they attribute to inclusive education (Lanes et al., 2020; Koliqi & Zabeli, 2022). Although experience with disabilities is essential, it is complemented by reflective knowledge about the challenges posed by inclusion at the classroom level (Pov et al., 2024).

Regarding Hypothesis 3 (H3), knowledge of disabilities in children has a significant impact on attitudes towards SEN. Specialised knowledge about the conditions of students fosters a more positive attitude among teachers (Toye et al., 2018). The quality of training in the specialty is a factor to consider regarding attitudes (Fernandez et al., 2023), given that the severity of SEN is a continual concern when combined with emotional or behavioural issues (Avramidis et al., 2010). Thus, deeper and specialised knowledge in inclusive education generates more positive attitudes that allow teachers to feel better prepared for implementing inclusive practices (Krischler et al., 2019).

The theoretical implications of the study contribute to increasing the empirical evidence for the Theory of Planned Behaviour, as adapted to the context of inclusive education by Ajzen (1991). This theory establishes three components to identify teachers' behaviours towards inclusive education, one of the most important being attitudes towards behaviour (Yan & Sin, 2014). In other words, the knowledge acquired by future teachers will allow them to better perceive student needs and adapt relevant materials, strategies, and evaluation methods to the educational context. Another relevant point is the contribution to Self-Efficacy Theory, confirming that teachers' beliefs about a specific topic, such as inclusive education, affect their professional practice, enabling them to take a stance on their actions (Chhreti et al., 2020).

This study is based on Ajzen's (1991) Theory of Planned Behaviour, which explains that attitudes towards behaviour are one of three components, alongside subjective norms and perceived behavioural control, that increase the likelihood of engaging in a behaviour. Additionally, teachers' behaviours towards inclusive education are due to behavioural intention, that is, attitudes (Yan & Sin, 2014). It is also supported by Bandura's Self-Efficacy Theory, which

explores the willingness of teachers to implement inclusive strategies tailored for students with SEN (Chhreti et al., 2020).

CONCLUSION

In conclusion, it has been found that if future teachers possess theoretical knowledge of the concepts, characteristics, significance, and disabilities of children, they can demonstrate favourable attitudes towards special educational needs. In other words, adequate professional training within university settings can influence how aspiring teachers will be willing to adapt their teaching and assessment strategies for students with disabilities. In this regard, training institutions play a crucial role when establishing the curriculum for the professional profile they aim to develop. Therefore, it would be advisable to conduct studies that intervene in the continuous training of aspiring teachers.

In terms of practical implications, identifying future teachers with solid knowledge and positive attitudes enables them to employ inclusive instructional strategies. Therefore, investing in preparation programmes for future teachers represents a proposal that could enhance the quality of teaching practices (Alsarawi & Sukonthaman, 2021). Teacher training programmes need to implement courses or modules focused on inclusive education, as having studies (information) allows for better action (Varcoe & Boyle, 2013). In this context, ongoing training through workshops, courses, or seminars could lead to an increase in positive attitudes towards SEN (Sevilla et al., 2018). In addition, it is important to strengthen informational and research skills (Chura-Quispe et al., 2025) so that teachers have greater access to up-to-date information to make pedagogical decisions that contribute to the satisfaction of student-centred teaching in schools (García Castro et al., 2022). Consequently, institutions play an important role in proposing strategies to strengthen competencies from undergraduate programmes.

ACKNOWLEDGMENT

We would like to express our gratitude for the funding provided by the Newman Graduate School.

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