AUTHOR:
Alexandros Argyriadis[1] (iD)
Panagiotis Paoullis[1] (iD)
Eleni Samsari[1] (iD)
Agathi Argyriadi[1] (iD)

AFFILIATION:
[1]Frederick University, Cyprus

Self-Assessment Inclusion Scale (SAIS): a tool for measuring inclusive competence and sensitivity

Abstract

Recent studies highlight the fact that the establishment of an inclusive school is regarded as a requirement for the growth of a pluralistic, democratic society in which each form of diversity is welcomed and valued and the maintenance of social justice is a top priority. The aim of this research was to design and validate the Self-Assessment Inclusion Scale (SAIS) and test it in the population of teachers in Greece and Cyprus. The SAIS scale aims to self-assess the participants' inclusive competence. Its ultimate goal is to help people to consider their skills, knowledge, and awareness of themselves in their interactions with others. The validation of the SAIS scale took place between October 2022 and February 2023 in 401 teachers in Greece and Cyprus using census sampling. The sample consisted of all school grade school teachers. The results of this study show that SAIS scale is reliable, functional and suitable for use in order to measure the inclusive competence of the participants. Moreover, it emerged that the participants were willing to consider their daily actions and behaviours and had some awareness of their own prejudices and stereotypes. However, there is still a lot to be done in terms of formulating plans to lessen harm and make the environment more inclusive for everyone. The findings imply that the participants were willing to consider their teaching methods and behaviour and that they were aware of some of their own biases and stereotypes. In conclusion, the self-assessment scale used in this study to assess inclusive competence was found to be valid and useful in assessing participants' cultural awareness, knowledge, behaviours, and attitudes. The research team recommends its use as a tool for maintaining inclusion in community settings, schools and other organisations.

Keywords: *diversity, inclusion measurement, inclusion scale, inclusive education, inclusive policy.*

1. Introduction

The creation of an inclusive school is considered a prerequisite for the development of a pluralistic and democratic society where each form of diversity is welcomed and appreciated and the sustainment of social justice is a primary goal. Inclusive education is given high priority in the education policies of many European countries, including Greece though bold actions need to be taken towards the real implementation of inclusive practice (Samsari *et*

al., 2022). According to Boyle *et al.* (2011: 77), "the commitment to inclusion begins with each educator". Teachers have a very challenging role in creating a learning environment that can be responsive to the different needs, profiles and interests of all students. They are responsible for implementing inclusive practices within the school context and as a result they can affect the promotion of high-quality, inclusive education. A simple policy formulation does not ensure success and the optimistic attitudes of teachers are not sufficient by themselves in an attempt to turn an inclusive policy into reality (Kuyini *et al*., 2016) as their beliefs about inclusion may not necessarily align with their capacities to effectively manage a suggested practice in an inclusive context (Yu, 2019). Even if the leadership and the culture of the school are supportive of inclusion, educators need to make thoughtful choices and decisions holding an active interpretive stance towards the various issues that arise in the classroom (Naraian, 2017).

As a result, inclusive education requires of these teachers to possess a special set of competencies that were not previously part of their initial training (Blanton *et al*., 2011; Kuyini *et al.,* 2021). These key competencies include the essential skills, abilities and knowledge to teach in a way that meets the needs of each learner in a mainstream classroom (Argyriadis *et al*., 2023a; Florian, 2009; Hornby 2010), making educators able to design the educational process with greater flexibility adapting the learning objectives, the content, the materials and the environment, depending both on the different characteristics of the individual students and the whole classroom dynamics (Ainscow & Goldrick, 2010). The difficulties that educators face nowadays stem not only from the presence of special educational needs and/or disability (SEND), but also from other forms of diversity, including ethnic and cultural diversity, taking into account the effects of the current refugee surge (Samsari *et al*., 2022). The European Agency for Development in Special Needs Education outlined the profile of the inclusive teacher based on the following four core values: a) valuing student diversity; b) supporting all students; c) working with others; and d) personal professional development (Watkins, 2012). Each value corresponds to an area of inclusive teachers' competence. The findings of the study conducted by Kuyini *et al*. (2021) show that teachers recognise adaptive instructional approaches and strategies as the most crucial area of inclusive competence followed by human resources (teacher aides, specialist teachers) and material resources.

Teachers' inclusive education competence is regarded as key factor to the development of a successful inclusive school community (Majoko, 2019; Pit-ten Cate *et al.,* 2018; Xue *et al.,* 2023; Zulfija, Indira & Elmira, 2013). As explained by Bandura (1990), competence includes knowledge and abilities as well as the capacity to use them successfully in a variety of contexts and conditions, many of which include unpredictable and stressful factors. In the teaching profession, teachers are expected to transfer the gained theoretical knowledge into effective educational practices. Given the ephemeral nature of teaching and the complicated role that teachers play in inclusive educational contexts, a single definition of teachers' inclusive competence is neither feasible nor desirable (Mu *et al.,* 2015). Moreover, teachers' inclusive competence is understood as one of the primary elements of their professional competence when working within an inclusive educational environment and responding to the diverse needs of all students (Kirillova & Ibragimov, 2016). Understanding how mainstream teachers regard themselves as prepared and competent to teach and educate in inclusive settings would allow policymakers and teacher educators to train and empower future teachers better to meet the requirements of different learners and provide the most suitable educational environment for all children (Štemberger & Kiswarday, 2016).

The spread of competence-based approaches in education and the promotion of inclusive education worldwide have given rise to the relatively new notion of inclusive competence (Kirillova & Ibragimov, 2016). Although in recent years various aspects of inclusion have attracted much attention, little attention has been paid to the development of assessment tools suitable for measuring teachers' inclusive education competence. From the previous studies, it is evident that future research studies into any facet of inclusive education need to use psychometrically sound tools that enable researchers to respond to variables that could either help or hinder the development of inclusive competence (Štemberger & Kiswarday, 2016). Understanding teachers' self-perceptions of inclusive competence can contribute to the design and the delivery of teacher professional development and training programmes for both in-service and pre-service teachers (Navarro *et al*., 2016; Rojo-Ramos *et al.,* 2023).

The SAIS Scale is a self-assessment instrument used for the Self-Assessment of Inclusion capacity of teachers. It was developed by the research team for the needs of this study and was tested from January to March 2023. So far, however, no previous study has focused on the validation of the Self-Assessment Inclusion Scale (SAIS) in Greece and in Cyprus. This indicates the need to ensure that teachers' inclusive education competency is examined with a reliable and valid assessment instrument adapted for use in the Greek and Cypriot context. Therefore, the main objective of this research was to assess the psychometric properties of this scale in a large sample of Greek and Cypriot educators and to evaluate its use in identifying perceived inclusive education competence of teachers.

2. Aim of the study

The aim of this study was to design and validate the Self-Assessment Inclusion Scale (SAIS) and test it in the population of teachers in Greece and Cyprus. To this end, the research team followed the usual validation practices of research tools as described in the field of research methodology. In particular, the validity of the content, the validity of the conceptual construction and the usability of the tool were measured.

3. Materials and methods

3.1 The research tool

The SAIS scale aims to self-assess the participants' inclusive competence. Its ultimate goal is to help people to consider their skills, knowledge, and awareness of themselves in their interactions with others. Its goal was to assist communities to recognise what they can do to become more effective in working and living in a diverse environment. There is a rating scale to help respondents identify areas of strength and areas that need further development in order to reach inclusive competence. However, inclusive competence is a process, and learning occurs on a continuum and over a lifetime. This self-assessment checklist is divided into four main categories, which measure Awareness, Knowledge, Skills and Attitudes. The rating of the answers is set as 'never/not at all', 'sometimes/good', 'often/fairly good' and 'always/ excellent', with the score being at the end of each section, respectively. The respondent can add up the number of times he/she has checked that column, and multiply the number of times he/she has checked 'never' by 1, 'sometimes/occasionally' by 2, 'fairly often/pretty well' by 3, and 'always/very well' by 4. The more points he/she has, the more inclusively competent he/ she is becoming. The first category of inclusive awareness includes questions about dealing with otherness, self-knowledge, the individual's willingness to share his or her culture and

enter into a process of inclusive exchange, and the perception of discomfort when coming into contact with individuals from different inclusive backgrounds.

It also has questions about the assumptions made by individuals trying to understand the culture of another inclusive group as well as questions about challenging stereotypes, reflecting on how culture influences personal judgement, behaviour and acceptance, as well as possible ambiguity, curiosity and awareness of White identity. The second group that studies inclusive knowledge includes questions about learning from mistakes, the assessment of knowledge, the questions that the individual asks himself in terms of inclusive difference and the importance that this difference has to the individual. It further includes questions about knowledge of history, understanding the impact of culture, interest in lifelong learning and understanding the consequences of racism, sexism, homophobia, etc. Finally, this section has questions about knowledge of origin that has the individual back in time and the understanding of boundaries. The third and fourth section listing skills have questions about adaptability to diversity, active support for people on the diversity spectrum, and inclusive communication skills. It also records the search for opportunities to acquire skills and the active involvement of the individual in processes that promote inclusive experiences. Respect for diversity and the implementation of inclusive practices in combination with allied strategies and flexibility are some of the necessary elements that are recorded to compose a more complete picture of the inclusive ability of the individual.

3.2 Validity and reliability

The English language version of the SAIS was tested for validity and reliability. The reliability was tested using the Cronbach's α method. In addition, the internal structure was tested by a confirmatory factor analysis (CFA), and the validity analysis has also been considered. In fact, the measurements of the Cronbach alpha values were adequate, indicating a reliable tool.

3.3 Data collection and sample of the study

The validation of the SAIS scale took place between October 2022 and February 2023 with 401 teachers in Greece and Cyprus using convenient sampling. The sample consisted of all grade school teachers (Table 1). Initially, a pilot administration of the questionnaire was performed with to a sample of 52 teachers. The purpose of the pilot administration was to examine if the questions were well conceived by the participants in order to make improvements. The pilot testing's outcome was satisfactory, with a Cronbach alpha of 0.85.

4. Ethics

The research adhered to rigorous ethical standards and guidelines to ensure the rights and well-being of the participants and the integrity of the study. The study was approved by the Ethics in Research Committee of Frederick University and followed the principles outlined in the Declaration of Helsinki. Informed consent was obtained from all participants before they participated in the study. They were provided with comprehensive information about the purpose, procedures, potential risks, and benefits of the research. Participants were assured that their participation was voluntary and that they could withdraw from the study at any point without facing any consequences. To ensure confidentiality, all data collected were anonymised and stored securely. Personal identifiers were removed from the dataset to protect the privacy of the participants. Only the research team had access to the raw data, and all data were stored in compliance with data protection regulations. It is worth noting that

the ChatGPT AI software was used in 20/03/2023 to ensure the grammatical accuracy and proofreading of the manuscript.

5.   Data analysis

Descriptive statistics for the participants' characteristics were calculated. For the numerical variables the mean and standard deviation (mean, ± SD) were included, whereas for categorical variables, frequency counts and percentages [n, (%)] were calculated.

In order to assess the factorial structure of the proposed scale, both exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were performed. Specifically, the final sample (n=401) was randomly divided into two parts to obtain two mutually independent samples for the EFA (n=200) and CFA (n=201).

5.1 Exploratory factor analysis

On the first sample (n = 200) EFA analysis was performed. Items were analysed using the mean, standard deviations, skewness, and kurtosis of each item. Items with skewness larger than 3 or with kurtosis larger than 7 were removed from the questionnaire scale. On the remaining items, the Bartlett's test of sphericity with $p < 0.05$ and a Kaiser—Meyer—Olkin (KMO) measure of sampling adequacy of 0.6 was used in order to confirm the suitability of the dataset for the factor analysis (Hair *et al*., 2014).

Parallel analysis was employed to determine the number of factors (Horn, 1965). In addition, the principal components method with an oblique rotation was used to examine item loadings. Oblique rotation (direct oblimin) with Kaiser normalisation was conducted, since this rotation method does not restrict factors to be uncorrelated, but results in a factor solution similar to an orthogonal one (Osborne, 2014). Items with communality $h^2 < 0.40$ or factor loadings $\lambda < 0.50$ were removed from the questionnaire scale. It was also expected that the extracted factors should have at least three items fulfilling relevant criteria and that the resulting factor solution should explain at least 50% of the total variance (Hair *et al*., 2014).

Internal consistency of the scale was evaluated using standardised Cronbach's alpha coefficient, with alpha >0.7 and alpha >0.5 indicating a good and adequate value of the scale. In addition, the standardised Cronbach's alpha of each factor in case an item was deleted, was also calculated to help us improve the scale consistency (Hair *et al.,* 2014).

5.2 Confirmatory factor analysis

CFA with structural equation modelling (SEM) was used on the second dataset (n = 201) to examine whether the data fit the model proposed from EFA and thus verify the factor structure. The maximum likelihood method with robust error was used for parameter estimation. Standardised estimates of factor loadings as well as (residual) variances were obtained.

The model goodness of fit was tested considering the following indices: Chi-square value (Alavi *et al.,* 2020), comparative fit index (CFI) (Bentler, 1990), Tucker-Lewis index (TLI) (Tucker & Lewis, 1973) , root mean square error of approximation (RMSEA) (Steiger, 1990) and standardised root mean square residual (SRMR) (Jöreskog & Sörborn, 1993). The model was considered to have a good fit with $x^2/df < 5$, a RMSEA < 0.1, a SRMR < 0.05, a CFI, and NFI > 0.90 Hair. Item factor loadings higher than 0.4 were considered satisfactory (Hair *et al*., 2014).

Differences in score means in relation to demographic characteristics were also examined (i.e. gender, educational level, and place of origin). Specifically, two independent groups for each categorical demographic variable were created (i.e. gender: male, female; educational level: undergraduate, postgraduate; and place of origin: urban area and rural area). Then, the students' independent sample t-test was employed to identify any statistically significant difference in score means for each factor between these groups. Finally, Pearson correlation coefficient was used to analyse the correlation between the factors scores and numerical variables (i.e. age).

Statistical analysis for both EFA and CFA was performed using version R 3.6.2.

6. Results

Table 1 summarises participating teachers' (n=401) demographic characteristics. The majority of participants were females (83.0%). The mean age of the sample was 34.10 (SD= 7.00) and 44.4% of the participants came from urban areas. The majority of participating teachers hold a postgraduate education degree (71.6%).

Table 1:   Demographic characteristics of students (n = 401)

|		*n*(%) or Mean ± SD
Gender	Male	68(17.0)
	Female	333(83.0)
Age		34.10 ± 7.00
Level of education	Undergraduate/Special education	114(28.4)
	Postgraduate	287(71.6)
Place of Origin	Urban area	178(44.4)
	Rural area	223(55.6)

EFA

As mentioned, two mutually independent samples were created. Explanatory factor analysis was performed on the first sample (n=200) in order to access the factorial structure of the scale. Table 2 presents descriptive statistics for the responses of the participants. The items were analysed using the mean, standard deviations, skewness, and kurtosis of each item. Based on the analysis, all items have skewness smaller than 3 and kurtosis smaller 7, except for Item 30, which was therefore removed. The new dataset was considered suitable for EFA, since the Bartlett's Test of Sphericity was found to be significant (Bartlett's Test of Sphericity = 2106.5, p < 0.001) and the KMO was found to be satisfactory (0.85) (Hair *et al*., 2014).

Table 2:   Descriptive statistics for the responses of participants (n=200), EFA

item	mean	sd	skew	kurtosis		item	mean	sd	skew	kurtosis
1	3.67	0.54	-1.58	2.64		16	3.68	0.59	-1.95	3.96
2	3.65	0.51	-0.96	-0.34		17	2.92	0.98	-0.51	-0.78
3	3.59	0.56	-0.95	-0.12		18	3.73	0.53	-2.05	4.45

item	mean	sd	skew	kurtosis		item	mean	sd	skew	kurtosis
4	2.00	0.95	0.57	-0.70		19	2.00	0.96	0.66	-0.56
5	3.19	0.66	-0.75	1.38		20	3.24	0.71	-0.56	-0.30
6	3.34	0.64	-0.66	0.44		21	3.50	0.58	-0.66	-0.56
7	3.40	0.58	-0.33	-0.78		22	3.49	0.65	-1.11	1.02
8	2.83	0.76	-0.11	-0.55		23	3.74	0.49	-1.73	2.13
9	3.16	0.78	-0.55	-0.46		24	3.56	0.61	-1.06	0.07
10	2.52	1.06	0.05	-1.24		25	3.26	0.8	-0.79	-0.14
11	3.36	0.63	-0.43	-0.69		26	3.79	0.44	-1.92	2.82
12	3.41	0.62	-0.54	-0.64		27	3.23	0.75	-0.68	-0.02
13	1.31	0.6	1.89	3.00		28	3.33	0.69	-0.53	-0.82
14	3.10	1.04	-0.89	-0.43		29	3.69	0.5	-1.18	0.20
15	2.32	0.86	0.4	-0.43		30	3.81	0.46	-2.6	8.19

Next, Parallel Analysis techniques in the remaining 29 items were used to determine the number of components. Screen plot (Figure 1a) suggests a four components (factors) solution. The Principal Components Analysis with Oblique rotation (Kaiser's normalisation) was used as the extraction method for the four components (factors). Based on the analysis, Items 1, 2, 3, 8, 9, 11, 12, 14, 21 and 24 had communality h2 < 0.40 or factor loadings λ < 0.50, and were therefore removed from the questionnaire scale.
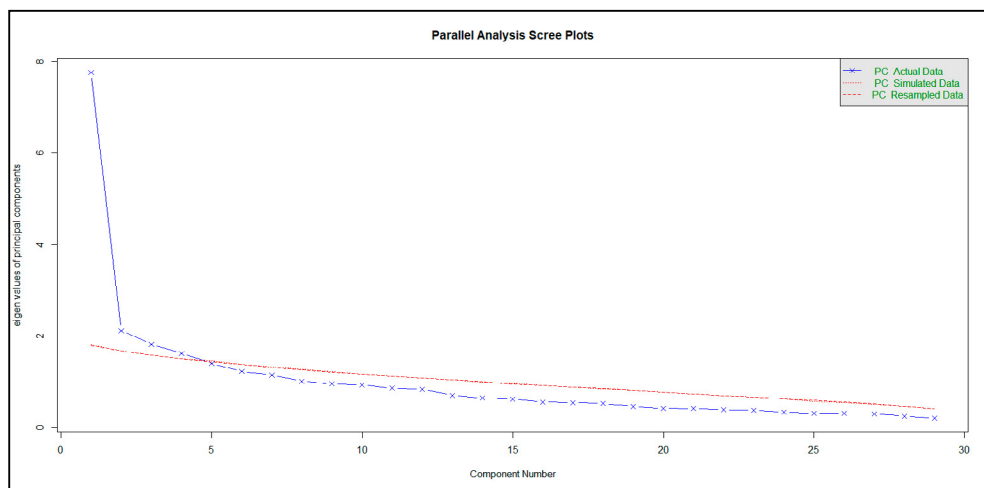

The Bartlett's Test of Sphericity and the KMO were calculated and Parallel Analysis was performed to the remaining set of 19 items. Screen plot (Figure 1b) confirmed the four components (factors) solution and the Bartlett's Test of Sphericity = 1234,1 (p < .001), while the KMO = 0.81 indicated that the dataset was suitable for EFA. Principal component analysis with oblique rotations was performed on the remaining set of items. EFA results are presented in Table 3.

Table 3:   Exploratory Factor Analysis (Principal component analysis with oblique rotations), n=200

Item	Factors				communality (h2)	std.alpha (if item is dropped)	std.alpha
23	**0.77**	0.03	0.05	-0.05	0.65	0.77	
18	**0.72**	-0.12	0.24	0.12	0.61	0.79	
26	**0.70**	0.07	0.07	-0.02	0.57	0.78	
29	**0.64**	0.08	0.04	-0.16	0.53	0.80	0.82
22	**0.64**	0.19	-0.25	-0.02	0.47	0.82	
16	**0.61**	0.09	0.11	-0.03	0.48	0.80	
17	-0.02	**0.78**	-0.06	0.07	0.58	0.75	
27	0.07	**0.77**	0.03	-0.04	0.65	0.73	
25	0.20	**0.71**	-0.03	-0.01	0.63	0.73	0.79
15	-0.33	**0.64**	0.20	-0.07	0.43	0.80	
20	0.03	**0.57**	0.29	0.21	0.51	0.77	
28	0.24	**0.56**	-0.10	-0.14	0.48	0.77	
7	0.08	0.04	**0.78**	-0.12	0.69	0.63	
5	-0.03	0.02	**0.78**	0.11	0.59	0.71	0.74
6	0.14	0.02	**0.72**	-0.10	0.64	0.62	
4	-0.08	-0.14	-0.07	**0.65**	0.50	0.39	
13	-0.08	0.15	-0.13	**0.63**	0.45	0.39	0.51
10	0.26	0.09	0.05	**0.62**	0.42	0.53	
19	-0.12	-0.05	0.01	**0.59**	0.40	0.45	
proportion of variance	0.18	0.16	0.11	0.09			Overall std.alpha 0.78
KMO=0.81, Bartlett's Test of Sphericity = 1234,1 (p < .001)							

The four-factor solution explains 54% of the total variance. Specifically, Factor 1 has 6 items (Items 16, 18, 22, 23, 26 and 29) with loadings between 0.61 and 0.77 and explains 18% of the variance. Factor 2 has 6 items (Items 15, 17, 20, 25, 27 and 28) with loadings between 0.56 and 0.78 and explains 16% of the variance. Factor 3 has 3 items (Items 5, 6 and 7) with loadings between 0.72 and 0.78 and explains 11% of the variance. Finally, Factor 4 has 4 items (Items 4, 10, 13 and 9) with loadings between 0.59 and 0.65 and explains 9% of the variance.

Parallel Analysis Scree Plots
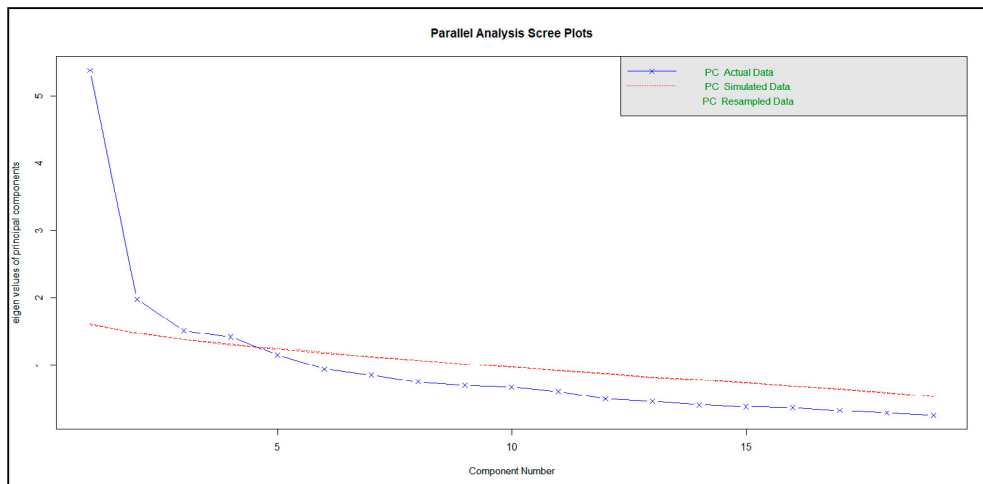
The internal consistency for Factors 1,2 and 3 ranges from 0.74 to 0.82, which shows good reliability, whereas the internal consistency for Factor 4 is 0.51, which is considered acceptable when a new scale is examined. As shown in Table 3, if Items 15 and 10 are dropped, the internal consistency of Factors 2 and 4, respectively, is improved. The overall internal consistency (alpha = 0.78) for the final scale (nineteen items) shows good reliability.

CFA

Next, CFA with structural equation modelling was performed on the other half of the sample (n=201). The Maximum Likelihood method was employed for parameters' estimation for the model. Specifically, for CFA, 2 models with 4 factors were considered. Table 4 provides an overview of fit indices for factor solutions of the CFA and the fully standardised factor loadings with (residual) variances for the fitted models are presented in Figure 2.

Table 4:   Results of the Confirmatory Factor Analysis: Estimated Models (n=201)

Model	χ^2		df	χ^2/df	RMSEA	CFI	TLI	SRMS
Model 1:	19-items (four factor)	222.35	146	1.52	0.05	0.92	0.91	0.06
Model 2:	18-items (four factors)	204.08	129	1.58	0.05	0.92	0.91	0.06
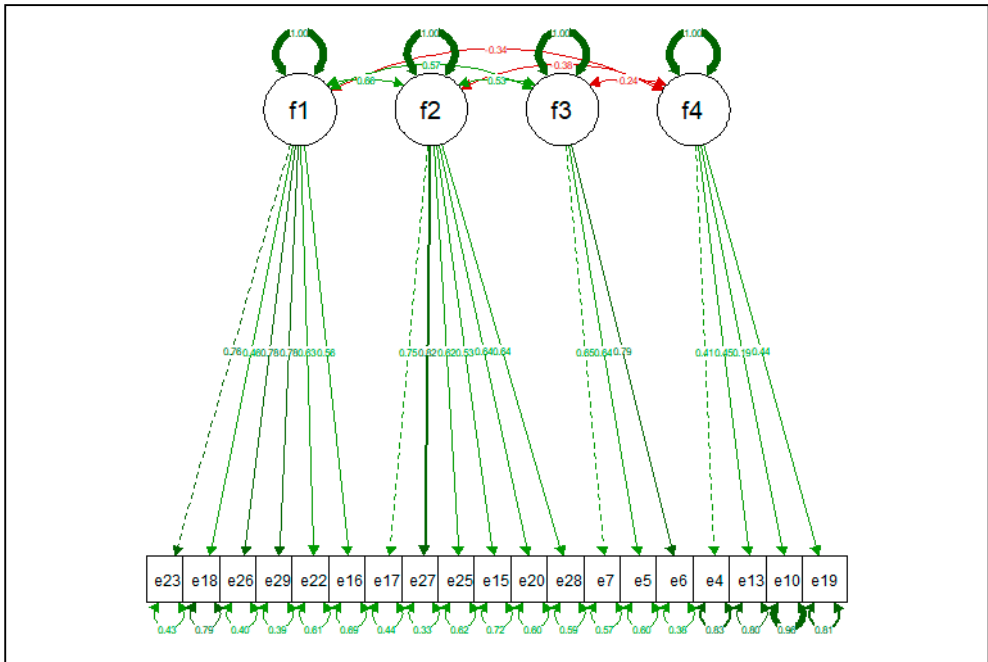
(a)
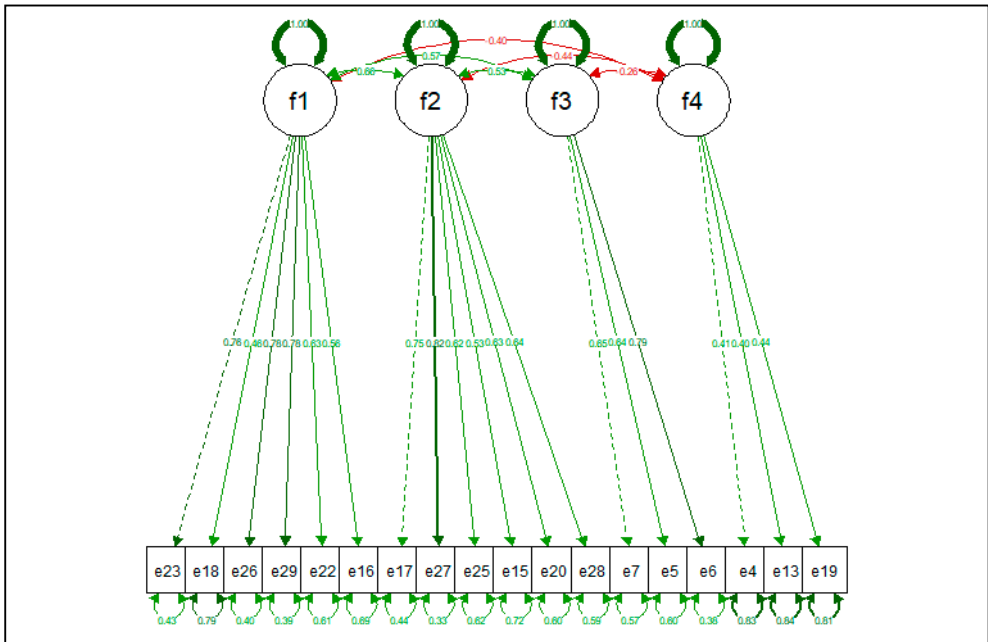
(b)

Figure 2: Results of the confirmatory factor analysis: **(a)** Model 1 (19-items model (4 factors)) **(b)** Model 2 (18-item model (4 factors)

Initially, the four-factor model with the 19 items (Model 1) suggested from EFA was considered. Model 1 gave satisfactory fit indices ($x2/df$ =1.52, RMSEA =0.05, CFI =0.92, TLI = 0.91) and very close to satisfactory indices for SRMR (SRMR = 0.06). The factor loadings for the 19 – items solution, was higher than 0.4 except for Item 10. This finding is in line with the EFA analysis, which indicated that if Item 10 were dropped from Factor 4, the external consistency of the factors would be improved. Therefore next, a model (Model 2) without Item 10 was considered. Model 2 showed fit indices similar to Model 1; $x2/df$ =1.58, RMSEA = 0.05, CFI = 0.92, TLI = 0.91 and SRMR=0.06. All factor loadings for the 18 – item solution were at a higher than satisfactory level.

For the chosen model (Model 2), the average scores for all factors were computed for the whole sample (n = 401). The correlation analysis for all factors is presented in Table 5. A moderate positive correlation between Factor 1, 2 and 3 and a weak negative correlation between Factor 4 and Factors 1,2 and 3 was identified. Furthermore, differences in factors score means in relation to demographic characteristics were also examined. No significant differences in the factors score were identified when the demographic characteristics; age, educational level, place of origin, and gender were examined.

Table 5:   Correlation table for the 4 factors

	factor1	factor2	factor3	factor4
factor1	1	.512**	.451**	-.282**
factor2		1	.369**	-.218**
factor3			1	-.192**
factor4	-			1

7. Discussion

The study aimed to provide key findings on the validation report here. The self-assessment scale mentioned in the text measures various factors related to participants' awareness and attitudes towards cultural diversity and differences. The first factor assessed by the scale focuses on participants' awareness of their own assumptions, stereotypes, and cultural identity, and whether they have strategies to reduce the harm they may cause to students who have a different worldview. This factor also includes questions on participants' comfort level when encountering differences in communication with their students, their beliefs about the education of students with disabilities or learning difficulties, and their attitudes towards the intelligence of students with disabilities.

Additionally, this factor includes questions that assess participants' understanding of their own individual identity, their perception of human diversity as a positive aspect, their willingness to share their own experiences in order to learn about others, and their awareness of potential misunderstandings during communication. Overall, this factor aims to gauge participants' level of cultural competence and sensitivity towards individuals with diverse backgrounds and experiences.

Studies have found that teachers' awareness of their own cultural biases and stereotypes is a critical factor in creating a culturally responsive classroom (Gorski & Swalwell, 2015; Ladson-Billings, 2014). In particular, teachers who are aware of their own cultural identity and biases are better able to create a classroom environment that is inclusive and welcoming to all students, regardless of their cultural background or identity (Gay, 2010).

The finding that some participants are aware of their mistakes in their behaviour is also consistent with the literature. According to Villegas and Lucas (2002), teachers who are willing to reflect on their own teaching practices and acknowledge their mistakes are more likely to engage in ongoing professional development and improve their practice over time. Moreover, studies have shown that teachers who are willing to admit their mistakes and seek feedback from their students are better able to build trusting relationships with their students (Goldenberg *et al.,* 2015).

Overall, the results suggest that the participants have some level of awareness of their own cultural biases and stereotypes, and are willing to reflect on their own teaching practices and behaviour. However, there is still room for improvement in terms of developing strategies to reduce the harm they may cause and creating a more inclusive classroom environment for all students. The implication of this finding is that further professional development and training may be needed to help teachers develop these strategies and improve their practice.

The second factor measured by this self-assessment scale includes questions about the participants' knowledge. For instance, it assesses whether they have adequate knowledge about the history of people from Eastern or African countries, as well as the history of minorities in their country. It also evaluates whether they participate in lifelong learning programmes on diversity issues, address potential gaps in their diversity knowledge, and take opportunities to get involved in different places or situations to learn more. Additionally, it examines whether they are actively involved in initiatives that promote understanding of diverse groups, learning specialised cross-cultural topics that are necessary for their work, and whether they accept the diversity of students, such as sexual orientation, dress, haircut, etc. Finally, it assesses whether they recognise that stereotypes can encourage exclusion, violence, and injustice.

Recent studies have shown that although teachers may have some knowledge and awareness of diversity issues, there is still a need for more comprehensive and ongoing professional development in this area (Kwok, 2020). In particular, teachers may benefit from more specific training on the histories and experiences of diverse groups, as well as strategies for creating inclusive classroom environments (Argyriadis et al., 2023a). Additionally, it is important for teachers to recognise and actively address their own biases and stereotypes, as these can have a significant impact on learner outcomes (Cohen & García, 2020). The implication of this finding is that ongoing professional development and self-reflection can help teachers to continuously improve their understanding and practice of diversity and inclusion in the classroom.

The third factor measured by this self-rating scale includes questions related to the participants' behaviours. I accept the diversity of the learners (sexual orientation, dress, haircut, etc.). I recognise that stereotypes can encourage exclusion, violence, and injustice. I intervene effectively when I observe racist behaviour. I accept all diversity in appearance, beliefs, origins, and intelligence in my classroom. I behave with respect for the culture and opinions of others. I try to understand the needs of others and respect them even if I disagree

with them. Do I communicate with learners' families and discuss individualised growth opportunities? I have never been unfair to learners. I struggle when I encounter differences/ disagreements when communicating with my learners.

The fourth and final factor measured by this self-rating scale includes questions about the participants' overall attitude toward cultural diversity. These questions refer to possible discomfort when encountering differences or disagreements in communication with learners, whether the belief prevails that learners with disabilities or learning difficulties should be educated separately by specialised staff, and whether participants consider that students with disabilities have lower intelligence. The questions also cover unfair behaviour toward learners, positive responses to diversity, and participants' willingness to engage and learn more about diversity issues.

In the case of the self-assessment scale used in this study, it was found to have a high level of positive response from the participants, indicating that they were willing to engage with the questions and provide honest and thoughtful responses. This is an important factor in the reliability of the scale as it suggests that the participants were not simply selecting random answers or rushing through the questions without careful consideration as seen similarly in other studies (Argyriadis *et al*., 2022).

Additionally, the functionality of the scale was also evaluated, and it was found to be highly functional in measuring the construct of attitudes towards cultural diversity. The questions were clear and straightforward, and the responses provided useful data for analysis. This functionality is important in ensuring that the scale can be used to measure the construct effectively and accurately.

8. Conclusions

In conclusion, the self-assessment scale used in this study to measure inclusive competence was found to be reliable and functional in measuring participants' awareness, knowledge, behaviours and attitudes towards cultural diversity. The results suggest that the participants had some level of awareness of their own biases and stereotypes and were willing to reflect on their teaching practices and behaviour. However, there is still room for improvement in terms of developing strategies to reduce harm and creating a more inclusive classroom environment for all students. Ongoing professional development and training may be needed to help teachers develop these strategies and improve their practice. Furthermore, more specific training on the histories and experiences of diverse groups, as well as strategies for creating inclusive classroom environments, can help teachers to continuously improve their understanding and practice of diversity and inclusion in the classroom. Overall, this study provides valuable insights into how self-assessment scales can be used to measure inclusive competence and guide professional development for teachers.

9. Limitations of the study

While this study contributes valuable insights into participants' inclusive competence, several limitations should be noted. The convenience census sampling method also introduces potential selection bias, as those who chose to participate may differ in certain aspects from those who did not. Furthermore, the self-assessment nature of the SAIS scale might be susceptible to social desirability bias, as participants could provide responses they perceive as more socially acceptable. The study's cross-sectional design also restricts our ability to infer causality or longitudinal trends.

References

Ainscow, M. & Goldrick, S. 2010. Making sure that every child matters: Enhancing equity within education systems. In A. Lieberman, D. Hopkins, M. Fullan & A. Hargreaves (Eds.), *Second international handbook of educational change*. Springer. https://doi.org/10.1007/978-90-481-2660-6_48

Alavi, M., Visentin, D.C., Thapa, D.K., Hunt, G.E., Watson, R. & Cleary, M.L. Chi-square for model fit in confirmatory factor analysis. 2020. J. *Adv. Nurs.*, 76: 2209-2211. https://doi.org/10.1111/jan.14399

Argyriadis, A., Andreadaki, C., Chalkia, M. & Agathi, A. 2022. Studying abroad: social inequalities and challenges during the covid-19 pandemic crisis. *Int. J. Adv. Stu. Hum. Soc. Sci.*, 3: 149-153. http://dx.doi.org/10.22034/ijashss.2022.318742.1087

Argyriadis, A., Efthymiou, E. & Argyriadis, A. 2023a. Cultural Competence at schools: The effectiveness of educational leaders' intervention strategies. In *Inclusive Phygital Learning Approaches and Strategies for Students with Special Needs*. IGI Global, 33-51. https://doi.org/10.4018/978-1-6684-8504-0.ch002

Argyriadis, A., Fradelos, E. C., Argyriadi, A., Ziegler, E. & Kaba, E. 2023b. Advancing access to quality LGBTQIA+ health care: gender discrimination, socio-cultural, and mental health issues: a mixed-method study. *International Journal of Environmental Research and Public Health*, 20: 4767. https://doi.org/10.3390/ijerph20064767

Bandura, A. 1990. *Reflections on nonability determinants of competence*. In R.J. Sternberg & J. Kolligian (Eds.), *Competence considered*. Yale University Press.

Bentler, P.M. 1990. Comparative fit indexes in structural models. *Psychol. Bull.*, 107: 238. https://doi.org/10.1037/0033-2909.107.2.238

Blanton, L.P., Pugach, M.C. & Florian, L. 2011. *Preparing general educators to improve outcomes for students with disabilities.* Washington, DC: American Association of Colleges of Teacher Education and National Council for Learning Disabilities.

Boyle, C., Scriven, B., Durning, S. & Downes, C. 2011. Facilitating the learning of all students: The 'professional positive' of inclusive practice in Australian primary schools. *Support for Learning*, 26: 72-78. https://doi.org/10.1111/j.1467-9604.2011.01480.x

Cohen, J.J. & García, M.C. 2020. The influence of teacher preparation programs on preservice teachers' multicultural education attitudes. *Multicultural Education Review*, 12: 171-189.

Florian, L. 2009. Preparing teachers to work in "schools for all": Introduction to special issue on teacher education for inclusive education. *Teaching & Teacher Education*, 25: 553-554. https://doi.org/10.1016/j.tate.2009.02.004

Gay, G. 2010. *Culturally responsive teaching: Theory, research, and practice* (2nd ed). Teachers College Press.

Goldenberg, C., Gallimore, R., Reese, L. & Garnier, H. 2015. Cause for reflection: Supporting teacher learning in a professional development program. *Journal of Teacher Education*, 66: 173-186.

Gorski, P.C. & Swalwell, K. 2015. Equity literacy for all. *Educational Leadership*, 72: 34-40. Available at Equity Literacy for All – Inclusivity Institute [Accessed 3 November 2023].

Hair, J.F., Black, W.C., Babin, B.J. & Anderson, R.E. 2006. *Multivariate Data Analysis: Pearson New International Edition*. UK: Pearson Education Limited.

Horn, J.L. 1965. A rationale and test for the number of factors in factor analysis. *Psychometrika,* 30: 179-185. https://doi.org/10.1007/BF02289447

Hornby, G. 2010. *Preparing teachers to work with parents and families of learners with SEN in inclusive schools.* In C. Forlin (Ed.), *Teacher education for inclusion: Changing paradigms and innovative approaches*. Routledge.

Jöreskog, K.G. & Sörbom, D. 1993. *LISREL 8: Structural equation modeling with the SIMPLIS command language.* Mahwah, New Jersey: Scientific Software International, Lawrence Erlbaum Associates, Inc.

Kirillova, E.A. & Ibragimov, G.I. 2016. The inclusive competence of future teachers. *Journal of Organizational Culture*, *Communications and Conflict*, 20: 180-185. Available at https://www.proquest.com/scholarly-journals/inclusive-competence-future-teachers/doc view/1827840432/se-2?accountid=29914 [Accessed 3 December 2023].

Kuyini, A.B., Major, T.E., Mangope, B. & Alhassan, M. 2021. Botswana teachers: Competencies perceived as important for inclusive education. *International Journal of Inclusive Education*, 2: 1-16. https://doi.org/10.1080/13603116.2021.1988156

Kuyini, A.B., Yeboah, K.A., Das, A.K., Alhassan, A.M. & Mangope, B. 2016. Ghanaian teachers: competencies perceived as important for inclusive education. *International Journal of Inclusive Education*, 20: 1009-1023. https://doi.org/10.1080/13603116.2016.1145261

Kwok, J. 2020. Teachers' attitudes toward cultural diversity: A review of the literature. *International Journal of Multicultural Education*, 22: 48-66. https://doi.org/10.3389/fpsyg. 2022.976659

Ladson-Billings, G. 2014. Culturally relevant pedagogy 2.0: A.k.a. the remix. *Harvard Educational Review,* 84: 74-84. https://doi.org/10.17763/haer.84.1.p2rj131485484751

Majoko, T. 2019. Teacher key competencies for inclusive education: Tapping pragmatic realities of Zimbabwean special needs education teachers. *Sage Open*, 9: 9-29. https://doi. org/10.1177/2158244018823455

Mu, G.M., Wang, Y., Wang, Z., Feng, Y., Deng, M. & Liang, S. 2015. An enquiry into the professional competence of inclusive education teachers in Beijing: Attitudes, knowledge, skills, and agency. *International Journal of Disability, Development and Education*, 62: 571-589. https://doi.org/10.1080/1034912X.2015.1077934

Naraian, S. 2017. *Teaching for inclusion: Eight principles for effective and equitable practice*. New York: Teachers College Press.

Navarro, S., Zervas, P., Gesa, R. & Sampson, D. 2016. Developing teachers' competences for designing inclusive learning experiences. *Educational Technology and Society*, 19: 17-27. Available at https://espace.curtin.edu.au/handle/20.500.11937/5958 [Accessed 3 November 2023].

Osborne, J.W. 2014. *Best practices in exploratory factor analysis*. Scotts Valley, CA: CreateSpace Independent Publishing.

Pit-ten Cate, I.M., Markova, M., Krischler, M. & Krolak-Schwerdt, S. 2018. Promoting inclusive education: The role of teachers' competence and attitudes. *Insights into Learning Disabilities*, 15: 49-63. Available at https://files.eric.ed.gov/fulltext/EJ1182863.pdf [Accessed 3 November 2023].

Rojo-Ramos, J., Mendoza-Muñoz, M., Gómez-Paniagua, S., García-Gordillo, M.Á., Denche-Zamorano, Á. & Pérez-Gómez, J. 2023. Validation of a questionnaire to analyze teacher training in inclusive education in the area of physical education: The CEFI-R Questionnaire. *International Journal of Environmental Research and Public Health*, 20: 2306. https://doi.org/10.3390/ijerph20032306

Samsari, E., Nikolaou. G. & Palaiologou, N. 2022. Multicultural diversity and special needs education: Small steps towards a successful inclusive environment in Greece. In A. Hodkinson & Z. Williams-Brown (Eds.), *International issues in SEND and inclusion: Perspectives across six continents*. Routledge. https://doi.org/10.4324/9781003177135-12

Steiger, J.H. 1990. Structural model evaluation and modification: An interval estimation approach. *Multivar. Behav. Res*., 25: 173-180. https://doi.org/10.1207/s15327906mbr2502_4

Štemberger, T. & Kiswarday, V. R. 2016. Validation of the inclusive competences scale for educators (InComSEdu). *The New Educational Review*, 44: 243-253. https://doi.org/10.15804/tner.2016.44.2.20

Tucker, L.R. & Lewis, C. 1973. A reliability coefficient for maximum likelihood factor analysis. *Psychometrika*, 38: 1-10. https://doi.org/10.1007/BF02291170

Villegas, A.M. & Lucas, T. 2002. *Educating culturally responsive teachers: A coherent approach.* State University of New York Press.

Watkins, A. (Ed.) 2012. *Teacher education for inclusion: Profile of inclusive teachers*. European Agency for Development in Special Needs Education. Available at https://www.european-agency.org/sites/default/files/Profile-of-Inclusive-Teachers.pdf [Accessed 3 November 2023].

Xue, R., Chai, H., Zhu, D., Yao, L., Yan, W. & Fu, W. 2023. Analysis of the factors influencing inclusive education competency of primary and secondary physical education teachers in China. *Sustainability*, 15: 308. https://doi.org/10.3390/su15010308

Yu, S. 2019. Head start teachers' attitudes and perceived competence toward inclusion. *Journal of Early Intervention,* 41: 30-43. https://doi.org/10.1177/1053815118801372

Zulfija, M., Indira, O. & Elmira, U. 2013. The professional competence of teachers in inclusive education. *Procedia-social and behavioral sciences*, 89: 549-554. https://doi.org/10.1016/j.sbspro.2013.08.892