

Global competence scale: An adaptation to measure pre-service English teachers' global competences

Ismail Emre Kos¹, Handan Celik^{2*}

¹Ahmet Uğur Turhan Science and Technology High School, Trabzon, Türkiye

²Trabzon University, Fatih Faculty of Education, Trabzon, Türkiye

ARTICLE HISTORY

Received: Mar. 04, 2023

Accepted: Dec. 16, 2023

Keywords:

Global competence,
Globalization,
Pre-service English
teachers,
Teacher education.

Abstract: Global competence is a comprehensive term referring to the interconnectedness of various constructs ranging from knowledge to values required to communicate, cooperate, and work towards the well-being of not only the local but also the global community. Teacher education has an important role in preparing teachers equipped with global competences. Therefore, having tools which can validly and reliably measure if and to what extent pre-service teachers are globally competent is a requisite. Hence, this study aimed at adapting and validating the Global Competence scale developed by Liu et al. (2020) to Turkish to measure pre-service English language teachers' global competences and to obtain evidence regarding the psychometric properties of the scale to measure global competences in teaching and teacher education. The data collected from pre-service English language teachers ($N=351$) studying at various universities in Türkiye was divided into two equal halves. The first part of it was used to perform exploratory factor analysis which revealed an eight-factor 29-item structure. The second half which was used for confirmatory factor analysis yielded a good fit of a 25-item, eight-factor structure scale. The Cronbach's Alpha coefficient ($\alpha = .88$) and McDonald's Omega ($\omega = .89$) which indicated good internal consistency in the CFA dataset revealed excellent internal consistency ($\alpha = .90$, $\omega = .91$) in another independent dataset. Thus, the study revealed that the Global Competence scale has a good level of psychometric properties and reliability to measure pre-service English language teachers' global competences in the Turkish context.

1. INTRODUCTION

Today's world is more connected than ever before as the borders have been wiped out due to the growth in information and communication technologies and the human workforce who are linguistically more able. However, it is more challenging and demanding, as it requires individuals to possess various competences one of which is global competences. Its importance has been on the rise in the last few decades as a result of the diversity in different walks of life and the need to meet the expectations of such diversity. Moreover, global competence, as a key part of global education and a key concept in global competence education (Boix Mansilla & Jackson, 2011), is one of the noteworthy concepts for the United Nations Educational, Scientific and Cultural Organization (UNESCO) and its long-standing partner Organization for Economic

*CONTACT: Handan Celik ✉ handanelik@gmail.com 📍 Trabzon University, Fatih Faculty of Education, Trabzon, Türkiye

Co-operation and Development (OECD) which supports UNESCO so that it can achieve its goals for sustainability and education for a sustainable future. Besides enabling individuals to possess the skills to live in communities of multicultural, multilingual, and multiethnic diversity, to compete and succeed in a competitive job market, to use media and technology effectively, and to contribute to the achievement in sustainable development goals (OECD, 2018), “education for global competence can promote cultural awareness and respectful interactions in increasingly diverse societies” (p. 4). Moreover, the emphasis the United Nations (2015) and OECD (2018) put onto the education of globally competent individuals who can effectively and adequately respond to such global challenges as poverty, climate crisis, hunger, justice, and peace strengthens the need to do so. Furthermore, in his preface to Boix Mansilla and Jackson’s (2011) book entitled *Education for Global competence: Preparing Our Youth to Engage the World*, Howard Gardner wrote,

... today’s students need a globally conscious education for what is assured a global era. Young people need to understand the worldwide circulation of ideas, products, fashions, media, ideologies, and human beings. These phenomena are real, powerful, ubiquitous. By the same token, growing up in the world of today -and tomorrow!- need preparation to tackle the range of pervasive problems: human conflict, climate change, poverty, the spread of disease, the control of nuclear energy. (p. x)

Due to the variety in terminology, providing a precise definition of global competence seems to challenge scholars and result in interchangeable terms (Schenker, 2019). Global competency is the most prevalent of them (Shams & George, 2006; Reimers, 2009; Li, 2013; Li & Xu, 2016; Meng et al., 2017; Baily & Holmarsdottir, 2019; Schenker, 2019; Liu et al., 2020) which is accompanied by other terms such as intercultural competency (Deardorff, 2006; Bektaş-Çetinkaya & Çelik, 2013; Cui, 2013; Polat & Barka, 2014; Lin & Kapur, 2021; van de Vijver & Leung, 2019), global awareness (Hanvey, 1982; Kirkwood, 2001; Oxfam, 2006; Merryfield, 2008; Kurt et al., 2013; Hongtao, 2013), global mindedness (Hett, 1993; Park et al., 2016), and global citizenship (Lima & Brown, 2007; Morais & Ogden, 2011; Oxfam, 2015; Başarır, 2017; Andrews & Aydin, 2020).

Despite the variety in the terminology, as comprehensively defined by Liu et al. (2020), global competence (GC hereafter) refers to “students’ capabilities to actively acquire and understand other cultures and norms, keep an open mind, and use their global knowledge to communicate, interact, and work effectively outside their own culture” (p. 2). OECD (2018) defines GC as “a multidimensional capacity” and globally competent individuals as those who “can examine local, global and intercultural issues, understand and appreciate different perspectives and worldviews, interact successfully and respectfully with others, and take responsible action toward sustainability and collective well-being” (p. 4). Morais and Ogden (2011) also regard GC as a comprehensive term referring to one’s self-awareness, intercultural communication, and global knowledge as part of their global citizenship. What deserves attention in all these definitions is the multidimensional nature of GC which emphasizes knowledge, understanding, communication, cooperation, and action as key tenets of GC as scholars agree upon (see Piacentini, 2017; OECD, 2018; Parmigiani et al., 2022a). UNESCO also puts a stronger emphasis on culture, education, and communication and information for sustainability and sustainable development goals for which globally competent individuals are a must. Besides, the 21st century skills movement which is largely adopted by UNESCO and OECD includes global competences as components of global citizenship (see Morais & Ogden, 2011). Through its program for international student assessment (PISA), OECD prioritizes education for global competence and assessment of global competences (see OECD, 2018; OECD & Asia Society, 2018). When they improved the curricula for grades 2-8 and 9-12, the Turkish Ministry of National Education (MoNE, 2017) also embraced the 21st-century skills framework besides

values education and necessitated the injection of such global competences as communication in foreign languages, social and civic competences, cultural awareness, and communication.

Certain practices and opportunities such as study abroad (see Ozkul, 2019; Schenker, 2019; Fisher et al., 2022), exchange programs, virtual exchange programs (see Duffy et al., 2022; Ndubuisi et al., 2022), and teaching abroad (Cushner & Mahon, 2016) are seen as key means to acquire and develop GC. Such programs are also known to alter students' perspectives of the world and improve their cultural awareness (Cushner & Mahon, 2016) and intercultural competence and abilities (He et al., 2017; Özkan & Mutludoğan, 2018). Increase in social responsibility and civic mindedness and citizenship awareness (Lenkaitis & Loranc, 2019), enhanced knowledge and awareness of technological tools for communication and learning and understanding of the society are reported among other achievements (Hilliker & Loranc, 2022).

The concept of GC encompasses knowledge, understanding, and ability of local and global (Parmigiani et al., 2022a) besides language ability and knowledge and understanding of culture (Zhao, 2010). Furthermore, active engagement- that is, action - is required to influence the close and distant environments in which people live and to retain persistent consciousness in these environments in addition to attitudes and values to respond to global challenges (OECD, 2018). B. Hunter et al. (2006) regard globally competent individuals as those having “a firm understanding of the concept of globalization and world history ... the recognition of the interconnectedness of society, politics, history, economics, the environment, and related topics” (p. 282). With all these in mind, Liu et al. (2020) emphasize the importance of GC for both undergraduate and graduate students as they are most likely to work and communicate in contexts of linguistic and cultural diversity. Besides, they need to perform some professional tasks such as publishing and presenting their research papers in journals or at various organizations such as international conferences or meetings among colleagues.

Furthermore, what GC implies for teacher education deserves close consideration because to meet the challenges of today’s global world, “schools need teachers who understand the implications of globalization, are able to effectively work with the increasingly culturally and linguistically diverse student population, and to deliver a globally oriented curriculum” (Zhao, 2010, p. 426). For this reason, Parmigiani et al. (2022a, p. 1) regard “cooperation, inclusion, social engagement, and multicultural dialogue” as indicators of GC in teaching. Moreover, recent research on sustainability and UNESCO’s sustainable development goals put paramount emphasis on the need for teacher education for a more sustainable world (see Fischer et al., 2022; Rieckmann & Barth, 2022; Rieckmann, 2023). English language teachers as those who are more likely to work with culturally and linguistically diverse student groups play a pivotal role in a broad range of issues. The cultivation of intercultural awareness, sensitivity, communication and openmindedness for the appreciation of different worldviews and cultural perspectives are some of the foremost important issues. Besides, the injection of such attitudes and values as nondiscrimination alongside with cultivation of knowledge and skills of locally and globally important issues such as poverty, climate crisis, responsible use of natural resources such as water and the awareness to take action towards a more sustainable future are some other issues. Last but not least, the cultivation of global citizenship to meet the needs of increasingly diverse language classrooms is another motivation to educate globally competent English teachers who can also raise globally competent generations. Therefore, global competence is now regarded as “a fundamental disposition for teachers” (Parmigiani et al., 2022b, p. 1).

However, looking at how studies defined GC so far, we can easily conclude that there are diverse and even too broad opinions regarding what constitutes GC which further complicates the measurement of it. Despite the immense amount of interest regarding why and how to educate globally competent teachers (see Zhao, 2010; Boix Mansilla & Jackson, 2011; Brennan

& Holliday, 2019; Tichnor-Wagner et al., 2019; Kerkhoff & Cloud, 2020) and to measure GC in teacher education programs (see Parmigiani et al., 2022a; Parmigiani et al., 2022b; Sokal & Parmigiani, 2022), due to the complexity and multifaceted nature of the concept of GC which seems to harden the development of an instrument, very few studies have so far come up with a tool. To our best knowledge, in the Turkish context, there has been no tool developed to measure neither pre-service nor in-service English language teachers' GCs. The only tool available which is adapted by Karaca Akarsu and Özdemir (2021) to measure teachers' GC is not specific to English language teachers either.

In this regard, it is crucial to validate a tool to measure pre-service English teachers' GCs in a comprehensive manner. Therefore, in the current study, we aimed to adapt the global competence scale (GSC) developed by Liu et al. (2020) to Turkish and to test its psychometric properties. In doing so, we also aimed to examine and confirm the theoretical structure of GC as suggested by Liu et al. (2020).

1.1. Tools to Measure Global Competence

Due to the complexity and multidimensional nature of the construct of GC, researchers have approached the issue from various perspectives and used various tools. In this section, so as to draw a concise and precise picture, we only present the ones that are directly aimed at measuring GC, either as a standalone construct or as a dimension of a larger, comprehensive construct such as global citizenship (see Table 1).

Table 1. Summary of the instruments developed or adapted to measure global competence.

Author-Year	Type of the study	Constructs-Dimensions	Instrument	Participant group	Analysis conducted
Zheldibayeva (2023)	Adaptation	Knowledge, skills, attitudes and values	Global competence scale (Liu et al., 2020)	Graduate and undergraduate educational psychology students	EFA & CFA
Parmigiani et al. (2022b)	Development	Exploring, engaging, and acting	Global competence rubric	Experts in teacher education and international/intercultural educational issues	Modified delphi method
Karaca Akarsu & Özdemir (2021)	Adaptation	Disposition, knowledge, skills	Global competence survey (Brantley Todd, 2017)	In-service teachers of various majors	EFA & CFA
Liu et al. (2020)	Development	Knowledge, skills, attitudes and values	Global competence scale	Graduate students	EFA & CFA
Brantley Todd (2017)	Development	Disposition, knowledge, skill	Global competence survey	Elementary school pre-service teachers	Delphi Technique
Şahin & Çermik (2014)	Adaptation	Social responsibility, global competence, global civic engagement	Global citizenship scale (Morais & Ogden, 2011)	Undergraduate students at various majors at Faculty of Education & Faculty of Arts and Letters	EFA & CFA

Braskamp et al. (2014)	Development	Cognitive, intrapersonal, and interpersonal	Global perspective inventory (GPI)	Undergraduate students	EFA & Reliability
Morais & Ogden (2011)	Development	Social responsibility, global competence, global civic engagement	Global citizenship scale	Postsecondary students (undergraduate & international undergraduate programmes)	EFA & CFA
W. D. Hunter (2004)	Development	Knowledge, skills, attitude, and experiences	GC assessment instrument for evaluating college graduates	Human resource managers of transnational corporations and international educators at higher education institutions	Questionnaire Delphi technique
Hett (1993)	Development	Responsibility, cultural pluralism, efficacy, global centrism, and interconnection	Global-mindedness scale	Undergraduate students of various majors (arts, engineering, social sciences etc.)	EFA & CFA

As the summary shows, researchers' interest and work in GC in the last two decades has resulted in various, but still a limited number of, tools to measure GC. As one of the few researchers, Parmigiani et al. (2022b) developed a 32-item self-assessment rubric including 16 dimensions ranging from openness to interactive assessment strategies under three main areas named as exploring, engaging, and acting to be used by both pre-service teachers and teacher educators. Although the rubric is comprehensive, there was no statistical analysis to verify factor structure and reliability. The 48-item global competence survey developed by Brantley Todd (2017) includes three main dimensions which include the sub factors; open-mindedness, self-knowledge, communication capacity, and problem solving. The 28-item survey developed by Hunter (2004) as part of his Doctoral dissertation to evaluate the global competences of graduates of international education had four sections as knowledge, skills, attitudes, and experiences. However, the factor structure of the survey was not tested and validated through factor analyses. The 32-item global perspective inventory developed by Braskamp et al. (2014) includes 3 main dimensions named as cognitive, intrapersonal, and interpersonal. Each dimension has two scales. The 12-item cognitive dimension has cognitive knowing and cognitive knowledge scales. The 11-item intrapersonal dimension has intrapersonal identity and intrapersonal affect scales, and the 9-item interpersonal dimension has interpersonal social responsibility and interpersonal social interaction. All were tested for factor analysis and internal consistency. Additionally, Morais and Ogden (2011) developed the 30-item global citizenship scale under such factors as social responsibility, global competence, global civic engagement, self-awareness, intercultural communication, and global knowledge which they reported as strong and reliable to be used in education abroad contexts. The 30-item global-mindedness scale developed by Hett (1993) revealed a 5-factor structure namely responsibility, cultural pluralism, efficacy, global centrism, and interconnectedness through the factor analysis which also revealed acceptable levels of validity and reliability.

Additionally, a closer look into the audience that the tools can be used with revealed that although the majority included undergraduate students from various majors except for teacher education (e.g. Braskamp et al., 2014; Hett, 1993) and those of teacher education such as elementary school (e.g. Brantley Todd, 2017), Turkish language, Mathematics, Preschool

teaching, Social Sciences teaching (e.g., Şahin & Çermik, 2014), none addressed undergraduate students from English language teaching programs. The global perspective inventory developed by Braskmap et al. (2014) was suggested to be potentially used in such programs as study abroad, international student orientation, service learning or with faculty members or freshmen to seniors. The global competence rubric developed by Parmigiani et al. (2022b) was suggested to be used in various contexts including before and after study or training abroad and training besides its use for self-assessment by teacher educators and pre-service teachers. Although Şahin and Çermik (2014) validated Morais and Ogden's (2011) global citizenship scale into Turkish with the participation of undergraduate students from teacher education programs, pre-service English language teachers were not among the participants. Besides, the adaptation study of the global competence survey by Karaca Akarsu and Özdemir (2021) to measure teachers' global competences did not specifically address English language teachers, despite having a small number of English language teachers in the sample. All of these instruments are, without a doubt, valuable for use in education. However, the scale developed by Liu et al. (2020) to measure the global competences of graduate students is the most comprehensive in terms of its strength in defining the theoretical structure of the concept of GC (see Table 2 for details) as revealed by factor analysis and fit indices. Besides the scale addresses such significant competences as understanding of globalization (see Altan, 2017; Block & Cameron, 2002; Gnutzmann & Intemann, 2005), cross-cultural communication (Byram, 2009; Sarıçoban & Oz, 2014), appreciation of and respect towards cultures and values (İşisağ, 2010) which apply to English language teachers, and are worth closer examination to explore if and to what extent pre-service English teachers, who have a significant role in educating globally competent individuals, are equipped with such competences. In this regard, there seems an obvious need to adapt it to Turkish. The validation of such an instrument can also encourage researchers to test its psychometric features for use with pre- and in-service English language teachers in other contexts outside of Türkiye.

2. METHOD

This study aimed to adapt the global competence scale (GSC) developed by Liu et al. (2020) to Turkish and obtain empirical evidence regarding its psychometric properties to measure pre-service English language teachers' global competences in the Turkish context. With these in mind, we employed survey methodology to collect data for validity and reliability measures. We went through the following steps as suggested by Hambleton and Patsula (1998):

- considering such factors as purpose, time, resources, expertise, and relevance of the construct across cultures and groups, we determined the tool to be validated, rather than developing one,
- contacted the authors of the original scale and requested their permission
- selected two translators for forward translation and two other translators for back translation (for more about translation and linguistic validity see section 2.2)
- employed the scale to test its psychometric properties in Turkish
- employed the scale with another group of participants to cross-check its reliability.

2.1. Instrument

The GSC was originally developed by Liu et al. (2020) as a 35-item instrument to measure graduate students' global competences. They adopted 20 items from various other tools measuring global competence (see Olson & Kroeger, 2001; Hunter et al., 2006; Li, 2013), global perspective (see Braskmap et al., 2014), and global citizenship (see Morais & Ogden, 2011) and wrote 15 items. The items were reviewed by three experts who have studied and had work experience abroad in the internationalization of higher education and graduate education. Based on their feedback and comments, Liu et al. (2020) refined the scale and pilot tested it with 68 students for clarity and relevance of items. Based on the feedback, they further refined

the scale and piloted it with 1421 graduate students from five universities. Their initial exploratory factor analysis (EFA) resulted in eight factors explaining 68.6 % of the total variance. However, closer examination of item 7 revealed that it was different from all the other items. Therefore, it was reduced. Besides, item 11 was found both to be ambiguous and have strong loading in two factors (World Knowledge and Open Attitude and Values). It was also removed which resulted in a 33-item scale. The 11 items in the Attitudes and Values dimension were further analyzed through EFA revealing a three-factor structure resulting in a nine-factor model explaining 71.9 % of the total variance. The results of the confirmatory factor analysis (CFA) confirmed the nine-factor model ($\chi^2(459) = 1292.5, p < .001, RMSEA = .051, CFI = .932, TLI = .922$) under three dimensions (see [Table 2](#)).

Table 2. *Dimensions, sub-factors/definitions, and number of the items of the GCS (as reported by Liu et al., 2020, p. 4).*

Dimensions	Sub-factors/Definitions	Item numbers in the original scale
Knowledge and Understanding	1. World knowledge (WK): Have basic knowledge of other countries' languages, cultures, histories, and geographies	1, 2, 3
	2. Understanding Globalization (UG): Understand globalization, its developmental trends and its influence	4, 5, 6
	3. International Academic Knowledge (IAK): Have knowledge about international frontier research problems, theories, and methods	8, 9, 10
Skills	1. Use of Tools (UT): Be able to communicate in a foreign language and use information technology and other tools	12, 13, 20
	2. Cross-cultural communication (CCC): Be able to communicate, learn, and work with people from different cultural backgrounds	14, 15, 16, 17, 18, 19
	3. International Academic Communication (IAC): Be able to contact and communicate with scholars from different cultures	21, 22, 23, 24
Attitude and Values	1. Intent to Interact (II): Seek cross-cultural experiences, learning, and research.	25, 26, 27, 28, 29
	2. Open Attitude (OA): Have openness to understand, respect, and appreciate people outside one's own culture.	30, 31, 32
	3. Values (V): Identify with one's own culture and recognize that one's own worldview is not universal.	33, 34, 35

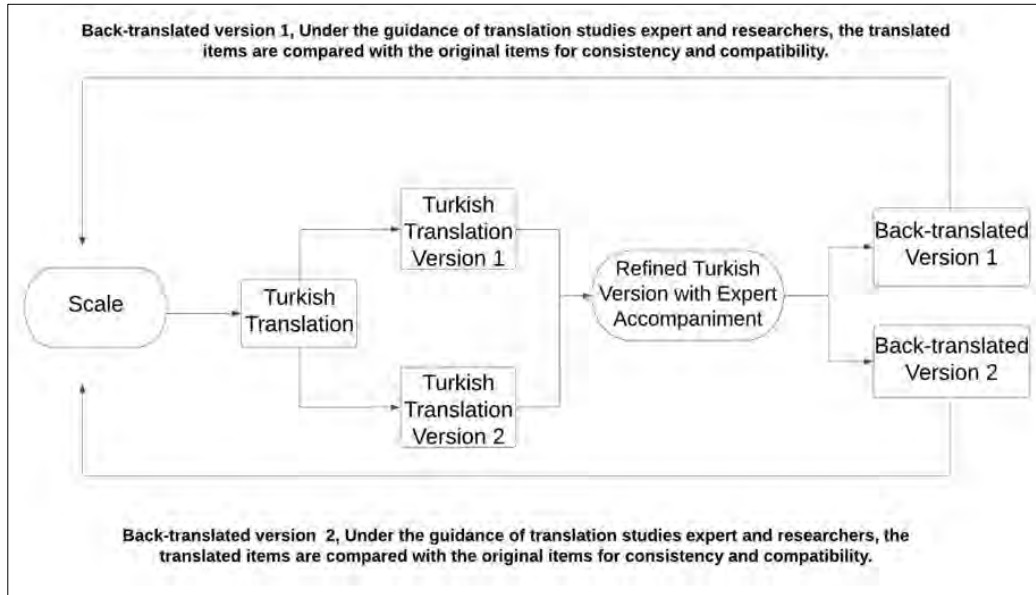
The items were designed on a five-point Likert scale ranging from strongly agree (5) to strongly disagree (1). 3 on the Likert was labeled as 'unsure'. Liu et al. (2020) emphasize the importance of GC for undergraduate students besides graduate ones. In their suggestions for further research, they state the need for translation and modification of the GCS in other countries to test its validity and reliability. Most importantly, they emphasize the need for more research using the GSC in different universities, departments, and programs.

2.2. Scale Translation

Before validating the scale, we submitted the required documents to the Research Ethics Committee of Trabzon University. Upon receiving approval from the Ethics Committee (E-

81614018-000-2200023392), we proceeded to the translation process to assure the scale's use in cross-cultural and cross-language contexts and “to achieve equivalence between the instrument in the SL [source language] and the instrument in the TL [target language]” (Sousa & Rojjanasrirat, 2011, p. 269). As we did so, we took Sousa and Rojjanasrirat's guidelines and steps into consideration for translation and adaptation (see Figure 1).

Figure 1. Translation and backtranslation process.



The items were firstly translated into Turkish by two bilingual (Turkish and English) faculty members at the English language teaching program where the second author teaches. They translated the items independently. Upon receiving the two versions of Turkish translations, we requested feedback and supervision from a third translator pursuing a Ph.D. degree and possessing teaching experience in English translation and interpretation. Using a “committee approach”, as Sousa and Rojjanasrirat (2011, p. 270) regard, we had a meeting with the third translator to compare the two translated versions of the scale and to resolve ambiguities in the word choice and the syntax. This was also to eliminate any likely cultural and linguistic differences in translation which could become sources of error in adapting a scale (Hambleton & Patsula, 1998). We closely examined each item in the original scale and its translations in both Turkish versions to achieve a refined Turkish translation (a synthesis) which we sent into back-translation. For the back-translation, we worked with two other translators, one with a PhD degree in English translation and interpretation and the other with an MA degree in English language teaching. They were completely blind to the original scale and worked independently. In both Turkish translations and back-translations, we kept the translators blind, so that none of them knew who the other translator was. Receiving the back-translations, we had another meeting with the third translator who knew the refined Turkish translation very well and compared the two back-translated versions of the instrument with its original language for consistency and compatibility. After achieving consensus regarding the relevance of the back translated items to the original ones, we finalized the translation process.

2.3. Participants

The sample included pre-service English language teachers ($N=351$) studying at English language teaching programs of state and private universities ($N=30$) from different regions and cities, i.e. Erzurum to Çanakkale, in Türkiye. In this regard, the sampling was a convenience or opportunity sample addressing the participants who “meet certain practical criteria, such as geographical proximity, availability at a certain time, easy accessibility, or the willingness to

volunteer” (Dörnyei, 2007, p. 99). The majority of the participants were females ($n=234$), while the rest ($n=117$) were males. Their ages ranged between 17 and 42 with an average of 21. Despite a lack of agreement (see Taherdoost et al., 2014) and various opinions regarding the sample size in scale adaptation (Osborne & Castello, 2004; Boateng et al., 2018), we aimed to achieve a sample size that satisfies the item-to-respondent ratio i.e. 5 participants for each scale item (see Büyüköztürk, 2002) and which is good enough and collects data from the right people (Osborne & Castello, 2004; Boateng et al., 2018). We collected data from July to October 2022 via Google Survey form which also included some demographic questions such as age, gender, grade, and the university of study. The first question in the form addressed voluntary participation.

In the first data set used to perform EFA ($N=175$), the respondents were mostly females ($n=121$), while less than half were males ($n=54$). The majority ($n=60$) were 3rd grade ELT students, which was followed by the 4th ($n=56$) graders, the 2nd graders ($n=40$), and the 1st graders ($n=19$). Their ages ranged between 17 and 42 with an average of 20.9. The data set used to perform the CFA ($N=176$) also included females ($n=113$) more than males ($n=63$). However, this is quite a common situation as English language teaching programs are very well known to have female students more compared to males. Moreover, responding to the questionnaire form was completely based on true voluntariness, and we organically ended up having more female respondents. Moreover, neither Liu et al. (2020) in the original study nor we in the current adaptation study took gender as a variable. Besides, Liu et al. (2020) did not have no such claim if the tool measures ‘one’ gender’s global competences. 2nd ($n=60$) and 4th graders ($n=52$) were relatively more compared to 3rd ($n=40$) and 1st graders ($n=24$). The average age was 21.6, 17 as the youngest and 39 as the oldest.

2.4. Data Analysis

For the analysis, we split the data into two equal halves. The theoretical factor structure of the scale was examined through EFA (Field, 2018; Orçan, 2018; Costa & Sarmiento, 2019) based on the relationship between the variables (items) (Büyüköztürk, 2002). When a tool is translated into another language, it does not simply mean to convey exactly the same meaning in a different language. The most important consideration also requires to assure cultural equivalence to convey the same meaning (see van de Vijver & Tanzer, 2004) and to prevent any likely scale measurement error which results from intercultural variation (Kennedy, 2005). This is a very key consideration in scale adaptation studies to begin with EFA not only to test the accuracy of the existing factor structure but also to closely examine and reveal any likely changes in factor structure across languages and cultures (see Orçan, 2018). We used the first half of the data ($N=175$) and performed EFA in SPSS 26.0 through the Principal Axis Factoring method which does not require a normality assumption (see Costello & Osborne, 2005). Furthermore, Costello and Osborne stated that scholars agree on the use of Principal Axis Factoring as it yields the most effective possible results to apply to other samples and optimum results regarding “how many meaningful factors might be in a data set” (p. 7). Besides, we used the Promax Rotation Method as a method of Oblique Rotation to test the intercorrelations between the factors (see Ryan & Blascovich, 2015) on theoretical grounds that the factors are related but not completely independent of each other (Field, 2018). Kaiser criterion method (see Costa & Sarmiento, 2019) was used, and eigenvalues were also closely examined and those above 1.0 determined the number of the factors (Costello & Osborne, 2005; Taysi & Orçan, 2020). Crossloading items were eliminated not to result in any errors in modeling, thus to improve accuracy in the number of factors (Boateng et al., 2018; Li et al., 2020).

The second half of the data ($N=176$) was used for CFA and analyzed through the Maximum Likelihood Estimation method in Jamovi 2.3.18. This was to validate the “accuracy of the structure resulting from EFA” (Orçan & Çelik, 2021, p. 1198), and thus, to confirm the

theoretical structure of the scale (Costa & Sarmento, 2019). The goodness of the model fit was evaluated thoroughly via Chi-square value (χ^2), Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Standardized Root Mean Square (SRMR), and Root Mean Square Error of Approximation (RMSEA) indices (Xia & Yang, 2019).

After confirming the factor structure of the scale, we tested its reliability using the second half of the data used for CFA and another independent dataset ($N=150$) which was gathered after adaptation. Cronbach's alpha (α) coefficients and McDonald's Omega (ω) of dimensions, factors, and items in both datasets were performed in Jamovi 2.3.18.

3. RESULTS

3.1. Exploratory Factor Analysis

Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy which revealed .849 indicated good adequacy for factor analysis procedures (Kaiser, 1970). Besides, Bartlett's test of sphericity ($\chi^2= 3257.042$, $p<.01$) suggested the suitability of the data for factor analysis (Shrestha, 2021). The first EFA revealed eight factors explaining 59.895 % of the total variance. The first factor namely World knowledge had three items (items 1, 2, 3) as in the original scale. The second factor, understanding globalization had three items (items 4, 5, 6) which were also the same as the items in the original scale. Similarly, the third factor, International academic knowledge had exactly the same items (items 8, 9, 10) as in the original scale. The fourth factor, Use of tools had two items (items 12, 13). Item 20 (the number in the original scale) which was originally in the Use of tools factor was found to load onto the fifth factor, namely Cross-cultural communication which had four items (items 17, 18, 19, 20). However, some items in this factor (items 14, 15, 16 as in the original scale) were cross-loading. For instance, item 14 (.444 and .445) and item 16 (.634 and .637) loaded onto two factors with differences which were equal or less than .3 (Y. Li et al., 2020). Item 15 also loaded onto two factors where the difference was less than .17 (Costello & Osborne, 2005). The factor loads were .530 and .514. These items were also found to not load onto any of the factors in the pattern matrix. The sixth factor, International academic communication had four items (21, 22, 23, 24) as in the original scale. The seventh factor, Intent to interact, had seven items (items 25, 26, 27, 28, 29, 30, 31). However, item 30 loaded onto multiple (3) factors with factor loadings higher than .50. Regarding the loads as "sufficient[ly] strong" as Acar Güvendir and Özer Özkan (2022, p. 167) stated, we excluded it. This resulted in factor seven to have 6 items. Lastly, the eighth factor Values had 4 items (items 32, 33, 34, 35).

Therefore, we removed crossloading items (14, 15, 16, 30) from further analysis and conducted another EFA which, similar to the first EFA, revealed eight factors explaining 61.723 % of the total variance of all 29 items which Hair et al. (2010) regard as satisfactory. The KMO value of the model (.857), and Bartlett's test ($\chi^2= 2747.252$, $p <.01$) indicated that the data was suitable for factor analysis. Table 3 shows the structures of eight factors and factor loadings of each item as revealed in the pattern matrix. The higher the factor loading is, the greater the contribution of the item to the related factor is (Field, 2018). Eigenvalues of each factor and the percentage of the total variance that is explained by each factor is also included. Moreover, for a better and an easier interpretation of the items, the item numbers in the original scale alongside the new item numbers are given.

Table 3. *Results of the second EFA.*

Number	Item	F1 (WK)	F2 (UG)	F3 (IAC)	F4 (UT)	F5 (CCC)	F6 (IAC)	F7 (II)	F8 (V)
I1 (*Q1)	Other than my own country, I know about the history and geography of at least one other country.	.945							
I2 (Q2)	Other than my own country, I know about the political and economic systems of at least one other country.	.845							
I3 (Q3)	Other than my own country, I know about the language, cultural norms, religions, beliefs, and customs of at least one other country.	.698							
I4 (Q4)	I understand the globalization concept and its development trends.		.826						
I5 (Q5)	I understand the effect of globalization on a country's development, individual lifestyles and scientific research activities.		.933						
I6 (Q6)	I understand the roles of international organizations and institutions in today's world and society.		.518						
I7 (Q8)	I know the internationally accepted theories and schools of thought in my field of study or profession.			.648					
I8 (Q9)	I know the international cutting-edge research problems, issues, and theories in my field of study or profession.			.882					
I9 (Q10)	I know the main internationally accepted research methods in my field of study or profession.			.818					
I10 (Q12)	I can easily use MS Office, PDF Reader, and other common international software.				.686				
I11 (Q13)	I can easily browse foreign language websites to obtain knowledge and the requisite information.				.817				
I12 (Q17)	I am able to quickly communicate in a common language in my interactions with people from different cultures.					.816			
I13 (Q18)	I have the ability to adjust to language and communication outside of my own culture.					.955			
I14 (Q19)	I can learn, work, and live outside of my own culture.					.698			
I15 (Q20)	I can easily comprehend foreign literature in my field of study or profession.					.467			

I16 (Q21)	When faced with problems in understanding professional literature, I can take the initiative to contact and consult the author.	.555							
I17 (Q22)	I made efforts to publish papers in SCI, SSCI, ISTP, EI, and other indexed journals or conferences with my supervisors.	.580							
I18 (Q23)	I can actively seek foreign scholars to discuss research questions and issues at international academic conferences.	.908							
I19 (Q24)	I can easily discuss research questions and issues with foreign scholars at international academic conferences.	.717							
I20 (Q25)	I would like to spend time and energy interacting with foreigners and establishing contacts.	.542							
I21 (Q26)	I would like to experience life and culture in other countries (such as through tourism).	.671							
I22 (Q27)	I would like to take the risk to experience cross-cultural learning and personal development (such as through overseas study and work).	.689							
I23 (Q28)	I would like to go abroad and experience foreign countries' academic and research environments.	.993							
I24 (Q29)	I would like to consult foreign scholars in my areas of interest at international academic lectures and report sessions.	.738							
I25 (Q31)	When communicating with foreigners, I try to understand their cultures and values.	.539							
I26 (Q32)	When communicating with foreigners, I try to appreciate their cultures and values.	.495							
I27 (Q33)	I identify with my own country's culture and values.	.625							
I28 (Q34)	I believe that my worldview is one of many equally valid worldviews.	.509							
I29 (Q35)	I consider myself valuable to my country and society.	.626							
Eigenvalue		9.103	2.809	2.241	1.655	1.560	1.289	1.100	1.024
Variance explained (%)		31.388	9.685	7.729	5.708	5.378	4.444	3.794	3.532

3.2. Confirmatory Factor Analysis

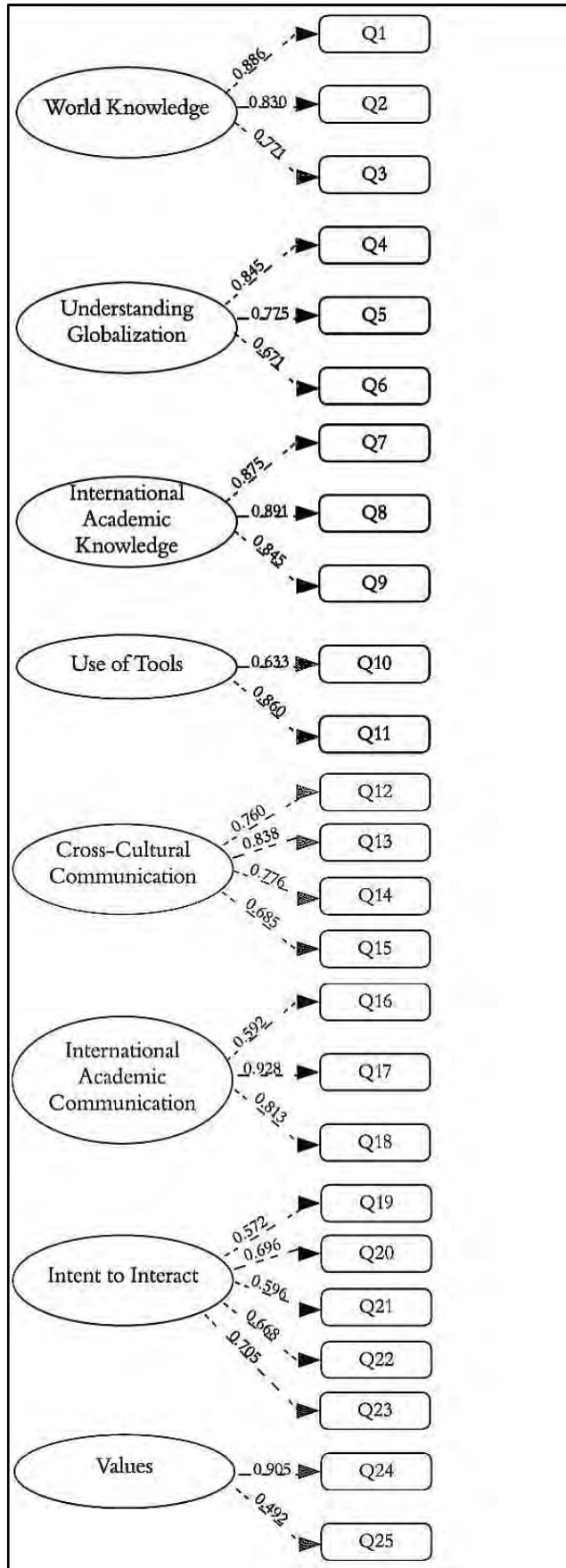
We performed the CFA of the 29 items revealed from the EFA. The initial model fit indices were as follows: $\chi^2 = .70$, $df=349$, $p<.001$, $CFI= 0.85$, $TLI= 0.83$, $SRMR= 0.08$, and $RMSEA= 0.08$. These meant that the original model needs to be reexamined and improved for a better model fit (Çapık, 2014).

A closer examination of the factor loadings of all items showed that item 33 (*I identify with my own country's culture and values.*) (numbers in the original scale) had a low loading (0.335). Therefore, we deleted the item and repeated the analysis which revealed the fit indices as $\chi^2 = .65$, $df=322$, $p<.001$, $CFI= 0.86$, $TLI= 0.83$, $SRMR= 0.08$, and $RMSEA= 0.07$. However, the indices indicated further improvement. Therefore, we also deleted item 32 (*When communicating with foreigners, I try to appreciate their cultures and values.*) which had a low load too (.443). This improved the overall goodness of fit indices $\chi^2 = .59$, $df=296$, $p<.001$, $CFI= 0.87$, $TLI= 0.85$, $SRMR= 0.08$, and $RMSEA= 0.07$, but still required further improvement. Additionally, item 21 (*When faced with problems in understanding professional literature, I can take the initiative to contact and consult the author.*) in the sixth factor and item 29 (*I would like to consult foreign scholars in my areas of interest at international academic lectures and report sessions.*) in the seventh factor were also seen not to have any relevance to the pre-service teachers as much as they did to graduate students who are more likely to attend in professional meetings and events and read research papers and consult their authors. They were also deleted which revealed the modified first-order CFA model fit indices as $\chi^2 = .47$, $df=247$, $p<.001$, $CFI= 0.90$, $TLI= 0.87$, $SRMR= 0.06$, and $RMSEA= 0.07$. In this regard, the consistent decrease in the chi-square value (Alavi et al., 2020; MacCallum et al., 1992), the increase in CFI and TLI ($\geq .90$) (Brown, 2015) and the decrease in SRMR ($\leq .08$) (Brown, 2015; Hu & Bentler, 1999) and RMSEA ($\leq .05-.08$) (Schermelleh-Engel et al., 2003) indices as suggested by scholars resulted in a better and a good model fit. Therefore, the structural validity of the eight-factor, 25-item scale is accepted (see Figure 2). Correlation among factors is also provided below (see Table 4).

Table 4. Correlation matrix of the eight factors.

Factors	1	2	3	4	5	6	7	8
1. World Knowledge								
2. Understanding Globalization	.618							
3. International Academic Knowledge	.409	.426						
4. Use of Tools	.206	.327	.312					
5. Cross-cultural Communication	.224	.361	.314	.442				
6. International Academic Communication	.483	.415	.554	.280	.411			
7. Intent to Interact	.443	.477	.155	.269	.348	.325		
8. Values	.413	.498	.330	.107	.262	.339	.372	

Figure 2. One-order confirmatory factor analysis model.



3.3. Reliability Analysis

Having validated the scale, we ran reliability tests in Jamovi 2.3.18. to test the internal consistency of the scale, its dimensions, and the factors. Besides Cronbach’s alpha (α) which is a widespread measure of reliability, we also computed McDonald’s omega (ω) which relies on the factor loadings in the CFA (Hayes & Coutts, 2020). As Table 5 shows, the overall reliability score of the scale yielded by Cronbach’s alpha was .88, and .89 as McDonald’s Omega showed. Both could be interpreted as good internal consistency (Feißt et al., 2019; Taber, 2018). The same interpretation applies to Cronbach’s alpha and McDonald’s Omega values of Dimension 1 and Dimension 2. As for the third dimension, although ω suggests acceptable consistency, α indicates moderate internal consistency (Daud et al., 2018). Additionally, to make sure if the scale can gather reliable data, we computed internal consistency scores in another independent dataset ($N=150$) which revealed a slight decrease in the scores of Dimension 1 which still indicated good reliability and an increase in the scores of Dimension 2 and 3. Overall, the scale can be interpreted as having good reliability.

Table 5. Internal consistency scores.

	Number of items	Internal consistency		Internal consistency in the second independent dataset	
		α	ω	α	ω
Entire scale	25	.88	.89	.90	.91
Dimension 1 Knowledge and Understanding	9	.88	.88	.86	.86
Factor 1 World Knowledge	3	.86	.87	.83	.84
Factor 2 Understanding Globalization	3	.81	.82	.80	.82
Factor 3 International Academic Knowledge	3	.90	.90	.87	.87
Dimension 2 Skills	9	.78	.81	.83	.84
Factor 4 Use of Tools	2	.66	.71	.72	.75
Factor 5 Cross-cultural Communication	4	.84	.84	.84	.84
Factor 6 International Academic Communication	3	.82	.83	.80	.83
Dimension 3 Attitude and Values	7	.69	.76	.82	.84
Factor 7 Intent to Interact	5	.75	.78	.85	.85
Factor 8 Values	2	.59	.62	.55	.55

4. DISCUSSION and CONCLUSION

Recent studies put strong emphasis on global competence as an “imperative” (Sinagatullin, 2019, p. 48), “a continuing challenge” (Oguro & Harbon, 2022, p. 20), and “an increasingly important disposition” (Parmigiani et al., 2022a, p. 1) in teacher education so that pre-service teachers can adequately and effectively be trained to work in classrooms with diverse students. Despite the accelerating interest in integrating GCs into teacher education (see Myers & Rivero, 2019; Chen & Lin, 2021; Diveki, 2022), a very recent study regards it as inadequate yet (see Wu & Li, 2023). Scholars developed tools (Parmigiani et al., 2022b, 2023), and few studies have assessed pre-service teachers’ GCs in diverse contexts (see Parmigiani et al., 2022b; Yacob et al., 2022). As a response to this trend in the Turkish context, researchers from other fields of teacher education have now diverted their attention to this pivotal area (see Pehlivan Yılmaz, 2023). However, to the best of our knowledge, there has been neither research developing tools nor assessing pre-service English language teachers’ GCs in the Turkish context yet. Moreover, success in such recent movements as global education, global competence education, education for sustainable development, and teacher education for

sustainable development require globally competent teachers so that they can raise globally competent future generations. Therefore, in the current study, we aimed to adapt the global competence scale developed by Liu et al. (2020) to Turkish and validate it to be used to measure pre-service English language teachers' GCs.

The original scale which has nine factors within 3 dimensions is revealed to have an eight-factor structure within those 3 dimensions which explained %61.723 of the total variance. Hair et al. (2010) regard this as satisfactory which means that the adapted scale can validly measure pre-service English language teachers' global competences in the Turkish context. This is also because that data involving human participants and addressing such psychological constructs as competence are almost never monodimensional and have links to other concepts (Field, 2018) as revealed in the study which verified the multidimensional nature of global competence. The dimensions, namely *knowledge and understanding, skills, and attitude and values*, were verified as in the original scale. The factor loads of the 25 items were between .49 and .93.

The factor structure of the first dimension is validated as it is in the original scale. This indicates that knowledge and understanding of GC is confirmed to have competences regarding world knowledge, understanding of globalization, and international academic knowledge which applies to pre-service English language teachers as well. Additionally, the items in this dimension could be interpreted as working well in the Turkish culture.

As for the second dimension, the current study also confirms that global competence requires use of such tools as MS Office, PDF reader as international software in addition to technological competences such as browsing foreign language websites. However, different from the original factor structure of the scale, this study showed that easy comprehension of foreign literature in one's field of study and profession is not a tool, but rather an indication of cross-cultural communication. Besides, in the current study item 14 (I can analyze and evaluate issues from the perspective of a foreign culture.), item 15 (I have made efforts to understand foreigners so that we can work or live together.), and item 16 (I can be aware of cultural differences in my interactions with people from different cultures.) were not validated as clear indicators of one's cross-cultural communication as suggested in the original scale. On the other hand, they seem to be stronger indicators of cross-cultural awareness as they indicate understanding of the home and target culture, attitudes towards culturally diverse individuals, and appreciation of cultural differences (Knutson, 2006). Moreover, these items also refer to intercultural communicative competence as they "require consideration of the ways in which people of different languages -including language learners themselves- think and act and how this might impact on successful communication and interaction" as Byram et al. (2013, p. 251) stated. Such findings also support the scholars who added intercultural communication as a dimension as they developed a tool to measure GC (Morais & Ogden, 2011). Additionally, this is in line with other scholars who approach GC from the perspective of intercultural competence (Deardorff, 2006) as it requires "*effective and appropriate* behaviour and communication in intercultural situations" (Deardorff, 2011, p. 66) in addition to "critical thinking ..., attitudes -particularly respect (which is manifested variously in cultures), openness, and curiosity, ... and the ability to see from others' perspectives" (p. 68). In this regard, further research might address if and how cross-cultural awareness, intercultural competence, and intercultural communicative competence could be added as a factor(s) to the GCS.

Moreover, item 21 and item 29 which were excluded in the CFA could easily be interpreted as resonating more with graduate students, as in the original scale, rather than they do with pre-service English language teachers who are less likely to contact the authors of research papers through various means and occasions such as e-mails or scientific meetings. Additionally, item 33 (I identify with my own country's culture and values.) which revealed the lowest factor loading in the CFA suggests that 'I identify with ...' seemed to make no sense semantically in

Turkish. However, more importantly, rather than being directly linked to *values* as the factor structure in the original scale, this item suggests stronger indication of cultural identity which refers to “individual’s psychological identification with a particular group” (Kim, 2007, p. 238). This interpretation also verifies empirical research which reported improvement in teachers’ understandings and appreciation of cultural identities upon being trained on their global competences (see Kerkhoff & Cloud, 2020). Additionally, item 30 (When communicating with foreigners, I try to respect their cultures and values.) which was reduced in the EFA as it loaded onto multiple factors and item 32 (When communicating with foreigners, I try to appreciate their cultures and values.) which was reduced in the CFA as it had a low load and the deletion of which improved the model fit indices does never mean that respecting and appreciating cultures and values of interlocutors are not valued and important. Rather, the results could indicate that there may either be another factor which is not in the original scale or these two items are redundant as there is another item which addresses understanding culture and values (item 31). Besides, this requires a closer examination and verification of if ‘respecting, understanding, and appreciating’ (as the behaviours communicated through the items) differ from each other and if there is any redundancy and confusion with ‘try to’ as in the syntax of these three items (item 31, 32, 33).

As for the reliability of the adapted version of the GSC, based on the CFA dataset *knowledge and understanding* and *skills* dimensions were found to have good internal consistency, while the third dimension, *attitude and values* indicated moderate internal consistency (Daud et al., 2018). However, the internal consistency scores of the GSC computed in another independent dataset showed that all the three dimensions have good internal reliability ($\geq .8$) (Field, 2018, p. 1200), while the scale itself indicates excellent reliability ($>.9$) (George & Mallery, 2016, p. 240).

Consequently, EFA and CFA revealed that the adapted version of the GCS has good model fit and is valid and reliable to measure pre-service English language teachers’ GCs. As the first adaptation study addressing assessment of pre-service English teachers’ global competences in the Turkish context, the current study both contributes to the knowledge base of global education and global competence education and provides the Turkish teacher education community with a tool to implement and further test in their own contexts. Besides all the other issues discussed so far, one of the most important conclusions is the complexity and multifaceted nature of GC as suggested by scholars (Morais & Ogden, 2011; OECD, 2018). This is what we observed in the EFA and CFA analyses in the current study, and other researchers who adapted another global competence scale with in-service teachers (Karaca Akarsu & Özdemir, 2021). In their very comprehensive study, which tested the internal consistency of a rubric they developed to assess global competences of pre-service teachers of 10 countries, Parmigiani et al. (2023) also reported that two (engaging and acting) of the three (acting) areas which include such dimensions as global self-awareness, world views, cultural diversity, professional interaction, intercultural teaching, international practice to name a few overlapped. Therefore, as in the current study, they interpret this as an indicator of the complexity and multifacetedness of GC and suggested that while the first area could better assess the GCs of students of higher education studying at a variety of disciplines, the second and the third areas could do so to assess teacher education students’ GC.

Last but not least, the scale can also be used to assess the GCs of in-service English language teachers, and it can work particularly well with English teachers pursuing a degree in graduate studies. The findings also reveal that the scale can potentially contribute to the body of knowledge on GC as a developing construct which is open to further research in the Turkish teacher education context.

4.1. Limitations, Implications and Suggestions for Further Research

To the best of our knowledge, this is the first study adapting a scale into Turkish to measure pre-service English language teachers' global competences. As revealed by psychometric properties and internal consistency scores, the adapted scale is valid and reliable. Due to the dominance of female participants, which is widely known as a characteristic of English language teacher education programs, and thus emerged as an organic factor, in the future studies, the optimization of the sample size would help reduce any gender bias.

Implications for teacher education include integration of global competence knowledge base, i.e. the knowledge, skills, attitudes, and values into the curricula regarding issues of local, global, and cultural importance besides awareness raising regarding the appreciation of worldviews, communication across cultures, and taking action for collective well-being and sustainability (see OECD & Asia Society, 2018). This also requires equipping teachers with the knowledge and skills of instructional strategies such as structured debates, organized discussions, current event discussions, playing games, project-based learning, and service learning (see OECD & Asia Society, 2018, p. 6). Besides, as scholars agree (see Liu et al., 2020; Sinagatullin, 2019), the global education movement, a part of which is global competence education is closely aligned with multicultural and intercultural education. In this regard, its goals include preparing teachers who will become adequately critical and reflective to possess such values and attitudes as tolerance, respect, recognition, and appreciation of different worldviews to effectively work with culturally and linguistically diverse students. This is a must in a rapidly changing world which urges individuals to adjust to the influx of diversity around them.

Additionally, teacher education plays an important role in the preparation of globally competent teachers who will raise future generations and cultivate a global mindset. Therefore, it requires researchers and teacher educators to be critical of the system that they are part of. This means that simply educating and preparing teachers who can and will teach the content knowledge in a particular subject area has little contribution to the societal growth. However, the more interconnected World now than ever before faces, on the other hand, some serious challenges such as climate crisis, poverty, discrimination, segregation, injustice, violence, and inequalities of gender, age, income which necessitate educating our children for empathy, tolerance, understanding, justice, human dignity, and communication so on so forth. Another reason for why we need to be concerned over if our teachers are globally competent is the significance that sustainable development carries. Teachers need to have a critical understanding, knowledge of pedagogy for global competence and education for sustainable development and ability to practice action-oriented transformative pedagogy (see Rieckmann, 2023). With all these in mind, teacher education plays a key role in the arrangement of opportunities to develop and test future teachers' global competences both in local contexts such as teaching practice in local schools and mobility programs in international contexts (see Parmigiani et al., 2022a).

Moreover, the knowledge and understanding of GC which is confirmed with all its sub-factors as world knowledge, understanding of globalization, and international academic knowledge suggests some practical implications for teacher education. Therefore, teacher education curricula should offer courses addressing knowledge and competence building in these areas. Besides, international academic communication which is revealed to correlate with such other dimensions as world knowledge and international academic knowledge could also suggest room for such innovative approaches as virtual exchange and project partnerships between higher education institutions. Lastly, the adapted scale also suggests practical implication for competence building in such areas as intercultural communication and intercultural communicative competence as indicators of global competence. Studies implementing such innovative approaches as critical sociocultural pedagogy (see Wu & Li, 2023) and sustainability

education (Birdman et al., forthcoming) report improvement in global competences and intercultural communicative competence.

Acknowledgments

We owe special thanks to Dr. Özge İŞBECER for her time and feedback in translation and backtranslation processes. Special thanks also go to Dr. Mehmet KOKOÇ and Dr. Fatih ORÇAN for their feedback in statistical analysis. This research was supported by TÜBİTAK (Project No 1919B012109865).

Declaration of Conflicting Interests and Ethics

The authors declare no conflict of interest. This research study complies with research publishing ethics. The scientific and legal responsibility for manuscripts published in IJATE belongs to the authors. **Ethics Committee Number:** Trabzon University, 2022-6/2.19.

Authorship Contribution Statement

Ismail Emre Kos: Research design, Instrument validation, Data collection, Literature review.
Handan Celik: Supervision, Research design, Instrument validation, Data collection, Statistical analysis, Data interpretation, Literature review, Writing and revising the manuscript.

Orcid

Ismail Emre Kos  <https://orcid.org/0000-0003-4219-7748>

Handan Celik  <https://orcid.org/0000-0001-8041-6062>

REFERENCES

- Acar Güvendir, M., & Özer Özkan, Y. (2022). Item removal strategies conducted in exploratory factor analysis: A comparative study. *International Journal of Assessment Tools in Education*, 9(1), 165-180. <https://doi.org/10.21449/ijate.827950>
- Alavi, M., Visentin, D.C., Thapa, D.K., Hunt, G.E., Watson, R., & Cleary, M. (2020). Chi-square for model fit in confirmatory factor analysis. *Journal of Advanced Nursing*, 76(9), 2209-2211. <https://doi.org/10.1111/jan.14399>
- Altan, M.Z. (2017). Globalization, English language teaching and Turkey. *International Journal of Languages' Education and Teaching*, 5(4), 764-776. <http://dx.doi.org/10.18298/ijlet.2238>
- Andrews, K., & Aydin, H. (2020). Pre-service teachers' perceptions of global citizenship education in the social studies curriculum. *Journal of Social Studies Education Research*, 11(4), 84-113. https://www.learntechlib.org/p/218549/article_218549.pdf
- Baily, S., & Holmarsdottir, H.B. (2019). Fostering teacher's global competencies: Bridging utopian expectations for internationalization through exchange. *FIRE: Forum for International Research in Education*, 5, 226-244. <https://doi.org/10.30564/jiep.v4i1and2.3501>
- Başarır, F. (2017). Examining the perceptions of English instructors regarding the incorporation of global citizenship education into ELT. *International Journal of Languages' Education and Teaching*, 5(4), 409-425. <https://doi.org/10.18298/ijlet.2127>
- Bektaş-Çetinkaya, Y., & Çelik, S. (2013). Perceptions of Turkish EFL teacher candidates on their level of intercultural competence. In H. Arslan, & G. Rata (Eds.), *Multicultural education: From theory to practice*, (pp. 345-362). Cambridge Scholars Press.
- Birdman, J., Çelik, H., Pandarova, I., Barron, A., Benitt, N., & Schmidt, T. (forthcoming). Connecting sustainability and culture: Building competencies through virtual exchange. In W. Leal, J. Newman, A. Lange Salvia, & L. Viera Trevisan (Eds.), *World sustainability series, North American and European perspectives on sustainability in higher education*. Springer.
- Block, D., & Cameron, D. (Eds.). (2002). *Globalization and language teaching*. Routledge.

- Boateng, G.O., Neilands, T.B., Frongillo, E.A., Melgar-Quinonez, H.R., & Young, S.L. (2018). Best practices for developing and validating scales for health, social, and behavioral research: A primer. *Frontiers in Public Health*, 6, Article 149. <https://doi.org/10.3389/fpubh.2018.00149>
- Boix Mansilla, V., & Jackson, A. (2011). *Educating for global competence: Preparing our youth to engage the world*. Council of Chief State School Officers.
- Brantley Todd, K. (2017). *Global competence survey development* [Doctoral Dissertation, University of Kentucky]. https://uknowledge.uky.edu/cgi/viewcontent.cgi?article=1031&context=edsc_etds
- Braskmap, L.A., Braskamp, D.C., & Engberg, M.E. (2014). *Global perspective inventory (GPI): Its purpose, construction, potential uses, and psychometric characteristics*. Global Perspective Institute Inc.
- Brennan, S., & Holliday, E. (2019). Preparing globally competent teachers to address P-12 students' needs: One university's story. *Global Education Review*, 6(3), 49-64.
- Brown, T.A. (2015). *Confirmatory factor analysis for applied research*. (2nd ed.). The Guilford Press.
- Büyüköztürk, Ş. (2002). Faktör analizi: Temel kavramlar ve ölçek geliştirmede kullanımı. [Key terms and use in scale development]. *Kuram ve Uygulamada Eğitim Yönetimi*, 32, 470-4483.
- Byram, M. (2009). Intercultural competence in foreign languages: The intercultural speaker and the pedagogy of foreign language education. In D.K. Deardorff (Ed.), *The Sage handbook of intercultural competence* (pp. 321-332). Sage.
- Byram, M., Holmes, P., & Savvides, N. (2013). Intercultural communicative competence in foreign language education: Questions of theory, practice and research. *The Language Learning Journal*, 41(3), 251-253. <https://doi.org/10.1080/09571736.2013.836343>
- Chen, Y., & Lin, R. P. (2021). Integrating global competence into elementary school pre-service teacher education of English language in Taiwan. In A. Y. Wang (Ed.), *Competency-based teacher education for English as a foreign language* (pp. 156-167) Routledge. <https://doi.org/10.4324/9781003212805>
- Costa, V., & Sarmiento, R. (2019). Confirmatory factor analysis. A case study. arXiv:1905.05598. <https://doi.org/10.48550/arXiv.1905.05598>
- Costello, A.B., & Osborne, J. (2005). Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis. *Practical Assessment, Research, and Evaluation*, 10, Article 7 <https://doi.org/10.7275/jyj1-4868>
- Cui, Q. (2013). *Global-mindedness and intercultural competence: A quantitative study of pre-service teachers* (Order No. 3589495) [Doctoral Dissertation, Indiana State University]. ProQuest Dissertations & Theses Global. <https://www.proquest.com/dissertations-theses/global-mindedness-intercultural-competence/docview/1430505082/se>
- Cushner, K., & Mahon, J. (2016). Overseas student teaching: Affecting personal, professional, and global competencies in an age of globalization. *Journal of Studies in International Education*, 6(1), 44-58. <https://doi.org/10.1177/1028315302006001004>
- Çapık, C. (2014). Geçerlik ve güvenilirlik çalışmalarında doğrulayıcı faktör analizinin kullanımı [Use of confirmatory factor analysis in validity and reliability studies]. *Anadolu Hemşirelik ve Sağlık Bilimleri Dergisi*, 17(3), 196-205.
- Daud, K.A.M., Khidzir, N.Z., İsmail, A.R., & Abdullah, F.A. (2018). Validity and reliability of instrument to measure social media skills among small and medium entrepreneurs at Pengkalan Datu River. *International Journal of Development and Sustainability*, 7(3), 1026-1037.

- Deardorff, D.K. (2006). Identification and assessment of intercultural competence as a student outcome of internationalization. *Journal of Studies in International Education*, 10, 241-266. <https://doi.org/10.1177/1028315306287002>
- Deardorff, D.K. (2011). Assessing intercultural competence. *New Directions for Institutional Research*, 149, 65-79. <https://doi.org/10.1002/ir.381>
- Diveki, R. (2022). Global competence development in EFL teacher training – An interview study on the global content in EFL teacher trainers’ courses in Hungary. *Journal of Adult Learning, Knowledge and Innovation*, 5(2), 49-59. <https://doi.org/10.1556/2059.2022.00058>
- Dörnyei, Z. (2007). *Research methods in applied linguistics*. Oxford University Press.
- Duffy, L.N., Stone, G.A., Townsend, J., & Cathay, J. (2022). Rethinking curriculum internationalization: Virtual exchange as a means to attaining global competencies, developing critical thinking, and experiencing transformative learning. *SCHOLE: A Journal of Leisure Studies and Recreation Education*, 37(1-2), 11-25. <https://doi.org/10.1080/1937156X.2020.1760749>
- Feißt, M., Hennigs, A., Heil, J., Moosbrugger, H., Kelava, A., Stolpner, I., Kieser, M., & Rauch, G. (2019). Refining scores based on patient reported outcomes – statistical and medical perspectives. *BMC Medical Research Methodology*, 19(167), 1-9. <https://doi.org/10.1186/s12874-019-0806-9>
- Field, A. (2018). *Discovering statistics using IBM SPSS statistics* (5th ed.). SAGE.
- Fischer, D., King, J., Rieckmann, M., Barth, M., Büssing, A., Hemmer, I., & Lindau-Bank, D. (2022). Teacher education for sustainable development. A review of an emerging research field. *Journal of Teacher Education*, 73(5), 509-524. <https://doi.org/10.1177/00224871221105784>
- Fisher, C., Hitchcock, L.I., Neyer, A., Moak, S.C., Moore, S., & Marsalis, S. (2022). Contextualizing the impact of faculty-led short-term study abroad on students’ global competence: Characteristics of effective programs. *Journal of Global Awareness*, 3(1), 1-34. <https://doi.org/10.24073/jga/3/01/03>
- George, D., & Mallery, P. (2016). *IBM SPSS statistics 23 step by step. A simple guide and reference* (14th ed.). Routledge.
- Gnutzmann, C., & Intemann, F. (Eds.). (2005). *The globalization of English and the English language classroom*. Gunter Narr Verlag.
- Hair, J.F., Black, W.C., Babin, B.J., & Anderson, R.E. (2010). *Multivariate data analysis* (7th ed.). Pearson.
- Hambleton, R.K., & Patsula, L. (1998). Adapting tests for use in multiple languages and cultures. *Socail Indicators Research*, 45, 153-171.
- Hayes, A.F., & Coutts, J.J. (2020). Use Omega rather than Cronbach’s Alpha for estimating reliability. But ... *Communication Methods and Measures*, 14(1), 1-24. <https://doi.org/10.1080/19312458.2020.1718629>
- He, Y., Lundgren, K., & Pynes, P. (2017). Impact of short-term study abroad program: Inservice teachers’ development of intercultural competence and pedagogical beliefs. *Teaching and Teacher Education*, 66, 147-157. <https://doi.org/10.1016/j.tate.2017.04.012>
- Hanvey, R.G. (1982). An attainable global perspective. *Theory into practice*, 21(3), 162-167. <https://doi.org/10.1080/00405848209543001>
- Hett, E.J. (1993). *The development of an instrument to measure global-mindedness* [Unpublished doctoral dissertation]. University of San Diego. <https://digital.sandiego.edu/dissertations/584>
- Hilliker, S.M., & Loranc, B. (2022). Development of 21st century skills through virtual exchange. *Teaching and Teacher Education*, Article 103646. <https://doi.org/10.1016/j.tate.2022.103646>

- Hongtao, J.I.N.G. (2013). Global awareness: foreign language teachers' beliefs and practices. *Intercultural Communication Studies*, 22(1), 95-116.
- Hu, L., & Bentler, P.M. (1999). Cutoff criteria for fit indices in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modelling*, 6(1), 1-55. <https://doi.org/10.1080/10705519909540118>
- Hunter, W.D. (2004). *Knowledge, skills, attitudes, and experiences necessary to become globally competent* [Unpublished doctoral dissertation]. Lehigh University.
- Hunter, B., White, G.P., & Godbey, G.C. (2006). What does it mean to be globally competent? *Journal of Studies in International Education*, 10(3), 267-285. <https://doi.org/10.1177/1028315306286930>
- İşisağ, K.U. (2010). The acceptance and recognition of cultural diversity in foreign language teaching. *Akademik Bakış*, 4(7), 251-260.
- Kaiser, H.F. (1970). A second generation little Jiffy. *Psychometrika*, 35(4), 401-41. <https://psycnet.apa.org/doi/10.1007/BF02291817>
- Karaca Akarsu, C., & Özdemir, M. (2021). Küresel yetkinlik ölçeğinin Türkçe uyarılma çalışması [Turkish adaptation study of the global competence scale]. *Uluslararası Toplum Araştırmaları Dergisi (International Journal of Society Researches)*, 18(42), 5544-5576 <https://doi.org/10.26466/opus.861584>
- Kennedy, D.P. (2005). Scale adaptation and ethnography. *Field Methods*, 17(4), 412-431. <https://doi.org/10.1177/1525822X05280060>
- Kerkhoff, S.N., & Cloud, M.E. (2020). Equipping teachers with globally competent practices: A mixed methods study on integrating global competence and teacher education. *International Journal of Educational Research*, 103, Article 101629. <https://doi.org/10.1016/j.ijer.2020.101629>
- Kim, Y.Y. (2007). Ideology, identity, and intercultural communication: An analysis of differing academic conceptions of cultural identity. *Journal of Intercultural Communication Research*, 36(3), 237-253. <https://doi.org/10.1080/17475750701737181>
- Kirkwood, T.F. (2001). Our global age requires global education: Clarifying definitional ambiguities. *The Social Studies*, 92(1), 10-15. <https://doi.org/10.1080/00377990109603969>
- Knutson, E. (2006). Cross-cultural awareness for second/foreign language learners. *Focus on the Classroom*, 62(4), 591-610. <https://doi.org/10.3138/cmlr.62.4.591>
- Kurt, M., Olitsky, N., & Geis, P. (2013). Assessing global awareness over short-term study abroad sequence: A factor analysis. *Frontiers: The interdisciplinary journal of study abroad*, 23(1), 22-41. <https://doi.org/10.36366/frontiers.v23i1.327>
- Lenkaitis, C.A., & Loranc, B. (2019). Facilitating global citizenship development in lingua franca virtual exchanges. *Language Teaching Research*, 25(5), 711-728. <https://doi.org/10.1177/1362168819877371>
- Li, J., & Xu, J. (2016). Investigating causality between global experience and global competency for undergraduates in contemporary China's higher education: A transformative learning theory perspective. *International Journal of Higher Education*, 5(3), 155-167. <https://doi.org/10.5430/ijhe.v5n3p155>
- Li, Y. (2013). Cultivating student global competence: A pilot experimental study. *Decision Sciences Journal of Innovative Education*, 11(1), 125-143. <https://doi.org/10.1111/j.1540-4609.2012.00371.x>
- Li, Y., Wen, Z., Hau, K.T., Yuan, K.H., & Peng, Y. (2020). Effects of cross-loadings on determining the number of factors to retain. *Structural Equation Modelling: A Multidisciplinary Journal*, 27(6), 841-863. <https://doi.org/10.1080/10705511.2020.1745075>

- Lima, C.O., & Brown, S.W. (2007). Global citizenship and new literacies providing new ways for social inclusion. *Psicologia Escolar e Educacional*, 11, 13-20. <https://doi.org/10.1590/S1413-85572007000100002>
- Lin, C.C., & Kapur, K. (2021). Pre-service teachers' perception toward global learning experiences: implications for teacher intercultural competency development. *Journal of Narrative and Language Studies*, 9(17), 257-270.
- Liu, Y., Yin, Y., & Wu, R. (2020). Measuring graduate students' global competence: Instrument development and an empirical study with a Chinese sample. *Studies in Educational Evaluation*, 67. <https://doi.org/10.1016/j.stueduc.2020.100915>
- MacCallum, R.C., Roznowski, M., & Necowitz, L.B. (1992). Model modifications in covariance structure analysis: the problem of capitalization on chance. *Psychological Bulletin*, 111(3), 490-504. <https://doi.org/10.1037/0033-2909.111.3.490>
- Meng, Q., Zhu, C., & Cao, C. (2017). The role of intergroup contact and acculturation strategies in developing Chinese international students' global competence. *Journal of Intercultural Communication Research*, 46(3), 210-226. <https://doi.org/10.1080/17475759.2017.1308423>
- Merryfield, M.M. (2008). Scaffolding social studies for global awareness. *Social Education*, 72(7), 363-366.
- Morais, D.B., & Ogden, A.C. (2011). Initial development and validation of the global citizenship scale. *Journal of Studies in International Education*, 15(5), 445- 466. <https://doi.org/10.1177/1028315310375308>
- Ministry of National Education. (MoNE). (2017). *Müfredatta yenileme ve değişiklik çalışmalarımız üzerine*. MoNE.
- Ndubuisi, A., Marzi, E., Mohammed, D., Edun, O., Asare, P., & Slotta, J. (2022). Developing global competence in global virtual team projects: A qualitative exploration of Engineering students' experiences. *Journal of Studies in International Education*, 26(2), 259-278. <https://doi.org/10.1177/10283153221091623>
- Myers, J.P., & Rivero, K. (2019). Preparing globally competent preservice teachers: The development of content knowledge, disciplinary skills, and instructional design. *Teaching and Teacher Education*, 77, 214-229. <https://doi.org/10.1016/j.tate.2018.10.008>
- OECD. (2018). *Preparing our youth for an inclusive and sustainable world: The OECD PISA global competence framework*. OECD. <https://www.oecd.org/education/Global-competency-for-an-inclusive-world.pdf>
- OECD, & Asia Society. (2018). *Teaching for global competence in a rapidly changing world*. OECD. Available at <https://asiasociety.org/sites/default/files/inline-files/teaching-for-global-competence-in-a-rapidly-changing-world-edu.pdf>
- Oguro, S., & Harbon, L. (2022). Enchancing pre-service teachers' global competencies through interdisciplinary study abroad. In M.D. Ramirez-Verduo, & B. Otcu-Grillman (Eds.), *Interdisciplinary approaches toward enchancing teacher education* (pp. 20-32). IGI Global.
- Olson, C.L., & Kroeger, K.R. (2001). Global competency and intercultural sensitivity. *Journal of Studies in International Education*, 5(2), 116-137. <https://doi.org/10.1177/102831530152003>
- Orçan, F. (2018). Exploratory and confirmatory factor analysis: Which one to use first? *Journal of Measurement and Evaluation in Education and Psychology*, 9(4), 414-421. <https://doi.org/10.21031/epod.394323>
- Osborne, J.W., & Castello, A.B. (2004). Sample size and subject to item ratio in principal components analysis. *Practical Assessment, Research, and Evaluation*, 9(9), 1-9. <https://doi.org/10.7275/ktzq-jq66>

- Ozkul, P. (2019). *Assessing study abroad relationship with perceived global competence levels of undergraduate business students* [Doctoral dissertation, University of South Florida]. USF Tampa Graduate Theses and Dissertations. <https://digitalcommons.usf.edu/cgi/viewcontent.cgi?article=9595&context=etd>
- Oxfam. (2015). Education for global citizenship: A guide for schools. Oxfam Education and Youth. Online. <https://oxfamilibrary.openrepository.com/bitstream/handle/10546/620105/edu-global-citizenship-schools-guide-091115-en.pdf?sequence=11&isAllowed=y>
- Oxfam. (2006). Education for global citizenship: A guide for schools. <http://www.oxfam.org.uk/coolplanet/teachers/globciti/wholeschool/getstarted.htm>
- Özkan, A., & Mutdoğan, S. (2018). Erasmus programı'nın tasarım öğrencilerinin yaşam ve eğitimlerine katkısı [Contribution of Erasmus Programme for Design Students' Life and Education]. *Turkish Online Journal of Design Art and Communication*, 8(2), 153-165. <https://dergipark.org.tr/pub/tojdac/issue/36245/408257>
- Park, H.S., Durkee, C., & Slobuski, T. (2016). *Global mindedness and global citizenship education*. Oxford University Press.
- Parmigiani, D., Jones, S.L., Kunnari, I., & Nicchia, E. (2022a). Global competence and teacher education programmes. A European perspective. *Cogent Education*, 9(1). <https://doi.org/10.1080/2331186X.2021.2022996>
- Parmigiani, D., Jones, S.L., Silvaggio, C., Nicchia, E., Ambrosini, A., Pario, M., Pedevilla, A., & Sardi, I. (2022b). Assessing global competence within teacher education programmes. How to design and create a set of rubrics with a modified delphi method. *SAGE Open*, 12(4), 1-13. <https://doi.org/10.1177/21582440221128794>
- Parmigiani, D., Nir, A.B., Ferguson-Patrick, K., Baruch, A.F., Heddy, E., Impedovo, M.A., Ingersoll, M., Jones, M., Kimhi, Y., Lourenço, M., Macqueen, S., Pennazio, V., Sokal, L., Timkova, R., Westa, S., & Wikan, G. (2023). Assessing the development of global competence in teacher education programmes: Internal consistency and reliability of a set of rubrics. *Higher Education Pedagogies*, 8(1), Article 2216190. <https://doi.org/10.1080/23752696.2023.2216190>
- Pehlivan Yılmaz, A. (2023). Determination of global competence levels of pre-service social studies teachers. *e-International Journal of Educational Research*, 14(3), 267-282. <https://doi.org/10.19160/e-ijer.1233534>
- Piacentini, M. (2017). Developing an international assessment of global competence. *Childhood Education*, 93(6), 507-510. <https://doi.org/10.1080/00094056.2017.1398564>
- Polat, S., & Ogay Barka, T. (2014). Preservice teachers' intercultural competence: A comparative study of teachers in Switzerland and Turkey. *Eurasian Journal of Educational Research*, 54, 19-38. <http://dx.doi.org/10.14689/ejer.2014.54.2>
- Reimers, F. (2009). Global competency is imperative for global success. *Chronicle of Higher Education*, 55(21), A29. Chronicle.
- Rieckmann, M., & Barth, M. (2022). Educators' competence frameworks in education for sustainable development. In P. Vare, N. Lausset, & M. Rieckmann (Eds.), *Competences in education for sustainable development. Critical perspectives* (pp. 19-26). Springer.
- Rieckmann, M. (2023, August 31). *Education for sustainable development in teacher education and schools – Transformative and disruptive education* [Conference presentation]. Summer School Teaching for Sustainable Development, Marburg, Germany.
- Ryan, W.S., & Blascovich, J. (2015). Measures of attitudes towards sexual orientation: Heterosexism, homophobia, and internalized stigma. In G.J. Boyle, D.H. Saklofske, & G. Matthews (Eds.), *Measures of personality and social psychological constructs* (pp. 719-751). Elsevier. <https://doi.org/10.1016/B978-0-12-386915-9.00025-5>

- Sarıçoban, A., & Oz, H. (2014). Research into pre-service English teachers' intercultural communicative competence (ICC) in Turkish Context. *Anthropologist*, 18(2), 523-531. <http://dx.doi.org/10.1080/09720073.2014.11891570>
- Sinagatullin, I.M. (2019). Developing preservice elementary teachers' global competence. *International Journal of Educational Reform*, 28(1), 48-62. <https://doi.org/10.1177/1056787918824193>
- Şahin, İ.F., & Çermik, F. (2014). Küresel vatandaşlık ölçeğinin Türkçeye uyarlanması: Güvenirlik ve geçerlik çalışması [Turkish adaptation of global citizenship scale: Reliability and validity]. *Doğu Coğrafya Dergisi*, 19(31), 207-218. <https://doi.org/10.17295/dcd.30443>
- Schenker, T. (2019). Fostering global competence through short-term study abroad. *Frontiers: The Interdisciplinary Journal of Study Abroad*, 31(2), 139-157. <https://doi.org/10.36366/frontiers.v31i2.459>
- Schermelleh-Engel, K., Moosbrugger, H., & Müller, H. (2003). Evaluating the fit of structural equation models: Tests of significance and descriptive goodness-of-fit measures. *Methods of Psychological Research Online*, 8(2), 23-74.
- Shams, A., & George, C. (2006). Global competency: An interdisciplinary approach. *Academic Exchange Quarterly*, 10(4), 249-257.
- Shrestha, N. (2021). Factor analysis as a tool for survey analysis. *American Journal of Applied Mathematics and Statistics*, 9(1), 4-11. <https://doi.org/10.12691/ajams-9-1-2>
- Sokal, L., & Parmigiani, D. (2022). Global competence in Canadian teacher candidates. *Frontiers in Education*, 7, Article 939232. <https://doi.org/10.3389/feduc.2022.939232>
- Sousa, V.D., & Rojjanasrirat, W. (2011). Translation, adaptation and validation of instruments or scales for use in cross-cultural health care research: A clear and user-friendly guideline. *Journal of Evaluation in Clinical Practice*, 17(2), 268-274. <https://doi.org/10.1111/j.1365-2753.2010.01434.x>
- Taber, K.S. (2018). The use of Cronbach's alpha when developing and reporting research instruments in science education. *Research in Science Education*, 48, 1273-1296. <https://doi.org/10.1007/s11165-016-9602-2>
- Taherdoost, H., Sahibuddin, S., & Jalaliyoon, N. (2014). Exploratory factor analysis: Concepts and theory. In J. Balicki (Ed.), *Advances in applied and pure Mathematics* (pp. 375-382). HAL Science Ouverte. Online <https://hal.science/hal-02557344>
- Taysi, E., & Orçan, F. (2020). Kendinden tikslenme ölçeğinin psikometrik niteliğinin tespit edilmesi [Testing psychometric properties of the self-disgust scale]. *SDÜ Fen-Edebiyat Fakültesi Sosyal Bilimler Fakültesi Dergisi*, 50, 167-176.
- Tichnor-Wagner, A., Parkhouse, H., Glazier, J., & Cain, J.M. (2019). *Becoming a globally competent teacher*. Hawker Brownlow Education.
- United Nations (UN). (2015). *Transforming our world: The 2030 agenda for sustainable development*. United Nations.
- van de Vijver, F., & Tanzer, N.K. (2004). Bias and equivalence in cross-cultural assessment: An overview. *European Review of Applied Psychology*, 54(2), 119-135. <https://doi.org/10.1016/j.erap.2003.12.004>
- van de Vijver, F., & Leung, K. (2009). Methodological issues and researching intercultural competence. In D.K. Deardorff (Ed.), *The Sage handbook of intercultural competence* (pp. 404-419). Sage Publications.
- Wu, X., & Li, J. (2023). Becoming competent global educators: Pre-service teachers' global engagement and critical examination of human capital discourse in globalized contexts. *International Journal of Educational Research*, 119, Article 102181. <https://doi.org/10.1016/j.ijer.2023.102181>

- Xia, Y., & Yang, Y. (2019). RMSEA, CFI, and TLI in structural equation modelling with ordered categorical data: The story they tell depends on the estimation methods. *Behavior Research Methods*, 51, 409-428. <https://doi.org/10.3758/s13428-018-1055-2>
- Yacob, N.S., Yunus, M., & Hashim, H. (2022). Globally competent teachers. English as a second language teachers' perceptions on global competence in English lessons. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.925160>
- Zhao, Y. (2010). Preparing globally competent teachers: A new imperative for teacher education. *Journal of Teacher Education*, 61(5), 422-431. <https://doi.org/10.1177/0022487110375802>
- Zheldibayeva, R. (2023). The adaptation and validation of the global competence scale among educational psychology students. *International Journal of Education and Practice*, 11(1), 35-46. <https://doi.org/10.18488/61.v11i1.3253>