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Crafting an ESL global competence framework: A fuzzy Delphi analysis of skills and dispositions

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Abstract

In an increasingly interconnected world, fostering global competence, particularly among students in English as a Second Language (ESL) education, is essential. This research aims to identify key indicators representing the constructs and domains for global competence development specifically tailored to ESL settings, utilizing the Fuzzy Delphi Method (FDM) to achieve expert consensus. The focus lies on the domains of skills and dispositions, which are critical for creating a robust ESL Global Competence Framework. The FDM is a systematic iterative process that reduces uncertainty in reaching a consensus among experts, integrating both quantitative and qualitative data. Eleven experts with diverse backgrounds participated in the research, providing their insights via a structured survey. Analysis revealed that out of thirty-eight original indicators proposed for the framework, thirty-seven achieved a consensus value above 75%, maintaining an acceptable threshold (d) ≤ 0.2 and a fuzzy score α-cut value of ≥ 0.5. Notably, three indicators were excluded based on expert feedback. Ultimately, thirty-four indicators were deemed significant for inclusion in the ESL Global Competence Framework. These findings highlight the necessity of explicit global competence constructs in developing ESL teachers and students' global competence to enhance global engagement and intercultural understanding, thereby enabling them to navigate complex global landscapes effectively.

Keywords: English language education, ESL Global Competence framework, Fuzzy Delphi, Global competence, Globally competent teaching.

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1. Introduction

For many years, English has emerged as a pivotal global language, profoundly influencing communication, education, and international relations. English plays a critical role as a global lingua franca, facilitating communication across diverse cultures and enabling individuals to participate in the global economy. Its significance is underscored by its role in economic and academic ecosystems, where English proficiency is essential for enhancing employability and fostering global collaboration [1, 2]. English as a Second Language (ESL) education aims to equip non-native speakers with the necessary language skills to thrive in English-speaking environments, fostering cross-cultural understanding and collaboration [3]. In the Malaysian context, ESL education holds considerable importance in fostering effective communication and preparing students for global opportunities. As English is the preferred medium of instruction in various educational and professional domains, proficiency in the language is essential for academic success and career advancement [4]. The integration of English language education has been driven by Malaysia's goal to develop a knowledgeable workforce equipped for the demands of the global economy, highlighted by initiatives aimed at improving the competency of English teachers and enhancing pedagogical approaches [5].

Global education and the attainment of global competence are increasingly vital in today's interconnected world. Global education equips learners with the knowledge and skills to navigate the complexities of global citizenship, promoting an understanding of diverse perspectives while fostering a sense of responsibility toward global issues [3, 6]. Such education encompasses not only linguistic proficiency but also cultural awareness, critical thinking, and the ability to engage with and contribute to the global community [7]. The concept of global competence includes skills that are essential for economic success in a globalized society, positioning individuals to adapt to multicultural environments and address pressing global challenges [8, 9]. Additionally, integrating these competencies into educational curricula enhances students' preparedness for real-world interactions and fosters social entrepreneurship and innovation, as suggested in recent studies [10, 11]. Ultimately, prioritizing global education cultivates informed citizens who are equipped to contribute positively to society, advancing collective well-being across cultures and nations.

Skills from the domains of global competence are crucial for preparing individuals to thrive in a rapidly evolving global landscape. These skills encompass critical thinking, intercultural communication, and adaptability, enabling learners to address complex global challenges effectively [12, 13]. As societies confront issues such as climate change, economic discrepancies, and cultural diversity, developing these competencies in educational settings fosters informed, responsible global citizens [8, 14]. Empirical studies emphasize that early exposure to global competence education enhances students' awareness and engagement with international issues, ultimately promoting social responsibility and collaborative problem-solving abilities [12, 13]. By integrating these essential skills into curricula, educators equip learners with the tools required for success in diverse, interconnected environments, ensuring that future generations are prepared to navigate and contribute positively to an increasingly complex world [8, 15].

Dispositions from the domains of global competence are essential in cultivating effective global citizens. These dispositions encompass attitudes such as openness, empathy, and cultural sensitivity, which are crucial for engaging with diverse perspectives and navigating multicultural environments [14]. Developing these positive dispositions enables individuals to respond constructively to global challenges, fostering collaboration and understanding among varied cultural groups [8, 15]. Moreover, such dispositions enhance interpersonal skills necessary for conflict resolution and critical thinking, essential in both personal and professional contexts. As individuals embody these dispositions, they contribute to building inclusive societies that value diversity and promote social justice on a global scale.

This research aims to identify key indicators representing the constructs and domains for global competence development, specifically designed for ESL contexts, employing the Fuzzy Delphi Method (FDM) to attain consensus among eleven experts. This research emphasizes the domains of skills and dispositions, which are vital for establishing a comprehensive ESL Global Competence Framework. The research is an extension of the previous research conducted by Yaccob et al. [16] on the domain knowledge. This paper reports the findings of the Fuzzy Delphi experts' consensus for the domains of skills and dispositions, representing the ESL Global Competence Framework.

2. Literature Review

In the context of an evolving global environment, the incorporation of global education into academic curricula is paramount for nurturing competencies among students essential for thriving in an interconnected world. Global education fosters awareness of shared challenges, promoting understanding and collaboration across cultures [16]. Global competence frameworks serve to cultivate awareness of shared global challenges and facilitate cross-cultural understanding and collaboration [17]. Educational institutions that embed these frameworks into their pedagogy empower students to address critical global issues ranging from climate change to poverty, thereby fostering not only linguistic proficiency but also vital cognitive skills such as critical thinking and problem-solving, which are essential for adaptation in diverse contexts [18, 19]. Furthermore, as societies grapple with rapid technological advancements and shifting workforce demands, fostering a global mindset becomes crucial for individuals seeking to excel in a dynamic global market [3, 14, 20]. This emphasis on global education cultivates informed citizens capable of promoting social equity and responsibility on an international scale, a perspective reinforced by the need for educators to understand intercultural communication and competence within their classrooms [20, 21].

In the realm of language education, the growing demand for English proficiency is increasingly evident globally [22] and Malaysia is no exception, with English serving as both a medium of instruction and a vehicle for knowledge dissemination [23]. Educators face the multifaceted challenge of addressing the interplay of identity, culture, and linguistic diversity among ESL students, necessitating the integration of global competence within ESL education practices [14, 20].

Current research advocates for the infusion of global competence into ESL education curricula, equipping educators and teachers with strategies to adapt their teaching methodologies and foster a global mindset among students. By delineating the constructs within the skills and dispositions domains, ESL teachers can acquire insights essential for navigating the complexities of contemporary educational landscapes, thereby preparing students for success in a globalized context [14]. The alignment of language education with global education initiatives is crucial for developing students who are not only proficient in English but also adept in cross-cultural competencies.

2.1. Global Competence in Education

Global competence is defined as the ability to critically think, communicate, and collaborate effectively with diverse individuals while understanding and navigating cultural differences Sidiropoulos [24]. Stankovska et al. [25] characterize global competence as the capacity to think critically, communicate, and collaborate with diverse individuals, articulate reasoned viewpoints, comprehend conflicts, and adapt to a rapidly interconnected world. This competency is recognized as a lifelong journey of personal growth cultivated through daily interactions with various components of society [9]. In the literature, researchers often equate global competence with terms such as intercultural competence and global awareness, reflecting overlapping dimensions that form part of the global competence framework [26, 27]. While the specific terminology may vary, the primary objective remains clear: to empower ESL teachers to nurture the qualities necessary for students to succeed in a complex, interconnected, and diverse environment [3, 26]. Recent studies underscore the importance of integrating technology and digital literacy in fostering global competence, as these skills enable students to engage meaningfully in digital communication and collaboration across cultures [7, 28]. Consequently, equipping educators with tools and strategies to incorporate these elements into their teaching practices is crucial for promoting a generation of globally minded individuals. The current study selects the domains of "Skills" and "Dispositions" that are integral to frameworks emphasizing global competence development. The importance of ‘Skills’ and ‘Dispositions’ in global competence development have been emphasized by researchers such as Diveki [29], Tichnor-Wagner et al. [21], Tichnor-Wagner et al. [26] and Cain et al. [30].

2.1.1. Domain: Skill

Skills are defined as abilities and particular talents. In this research, ‘skills’ relate to ESL teachers’ skills according to the elements of global competence in developing their global competence and globally competent teaching. As suggested by Tichnor-Wagner et al. [26] skills are the effective intercultural interaction and collaboration, which include various elements such as the ability to react to and act on issues of global importance.

2.1.2. Domain: Disposition

Dispositions in this research are defined as the qualities, characteristics, values, attitudes, and beliefs that are significant in developing individuals’ or ESL teachers’ global competence. Tichnor-Wagner et al. [26] define dispositions as attitudes, values, and beliefs. Teachers’ dispositions help them work effectively with their students from diverse backgrounds and instill a global mindset in students through their lessons [26].

Likewise, globally competent teaching is teachers' global competence translated professionally through knowledge, skills, and dispositions into classroom practice. In English as a Second Language (ESL) education, developing a Global Competence Framework that integrates essential skills and dispositions is crucial for equipping learners to navigate diverse cultural contexts [2, 3, 31]. To date, there have yet to be many studies conducted on the global competence paradigm in the Malaysian English education system. Notably, the discourse surrounding global competence in education remains heavily influenced by Western scholarship, necessitating further exploration of non-Western contexts, particularly within the Malaysian English education system [7, 29]. As such, the findings of this research contribute to the burgeoning scholarship on global competence, highlighting essential dimensions for the pedagogical practices of ESL teachers and reinforcing the need for context-specific frameworks [32].

3. Methodology

3.1. Research Design

This research employed the Fuzzy Delphi Method (FDM), which serves as an effective tool in the data collection and analysis processes by facilitating expert consensus on key constructs that shape global competence in ESL settings [3]. Through analyzing the perspectives of educators and industry experts, this research aims to identify critical indicators that enhance the teaching and learning of English within a global competence spectrum. Ultimately, the development of these indicators representing the selected ESL global competence constructs will not only inform curriculum design but also empower teachers and students with the skills necessary for successful global citizenship in an ever-changing landscape [2, 31].

3.2. Participants and Sample

The participants were selected through a purposive sampling technique that allows the selection of participants who possess specific characteristics or expertise related to the research's aims. Mustapha et al. [33] state that purposive sampling is suitable for FDM as it enables the identification of experts capable of contributing meaningful feedback in the respective research sphere. Additionally, the technique ensures that the information derived from the sample adequately reflects the nuances of the issue being studied. Furthermore, Zulkifli et al. [34] highlighting that careful selection of experts within the

FDM framework is vital since it impacts the validity and relevance of the data collected, emphasizing the necessity for participants to be knowledgeable and experienced in the subject matter. There were eleven experts involved in this research with criteria as follows:

(a) A doctoral degree holder in the field of English language, possessing over five years of experience in teaching where English serves as the medium of instruction.
(b) Current lecturers in higher education institutions or teacher training colleges;
(c) Knowledgeable and experienced in global competence, global education, and pedagogical strategies for globally competent teaching and learning;
(d) Exhibit expertise in intercultural competence, as well as intercultural and multicultural studies;
(e) Specialize in teacher training, teacher development programs, and studies related to English education;
(f) Experienced in the design and development of English curricula, particularly those aligned with the curricula and frameworks focusing on global education.
(g) Engage in design and development research or studies;
(h) Responsible for teaching and supervising students at various academic levels, including undergraduate, master's, and doctoral programs.
(i) Meet at least two or multiple criteria from the aforementioned categories;

A formal request for experts' participation in this research was emailed to each of the identified experts, and the necessary documents were shared upon agreement. Appendix 1 shows the demographic details of the experts for the FDM who are senior lecturers in respective institutions across the world.

3.3. Instrument

A needs analysis was conducted to identify initial constructs and indicators representing the domains of skills and dispositions. The findings from the needs analysis were used to develop an instrument for FDM data collection purposes. A survey questionnaire with proposed indicators as the items was developed. The sections in the survey were categorized according to the Skills and Dispositions domains. The categorization is as follows:

Table 2.
Categorization of the Domains and Constructs.

Domains	**Skills**	**Dispositions**
Constructs	Intercultural Collaboration (IC)	Sensitivity towards Beliefs and Practices (SBP)
	Diversity and Inclusivity (DI)	Value All Perspectives (VP)

The survey questionnaire was checked and reviewed for content and face validation by four local and international experts in the research area. Revisions and corrections were made on the choice of verbs used, the use of nouns, grammatical errors, and confusing statements based on the feedback from the expert reviews. The survey questionnaire has a Cronbach's Alpha value of 0.98, affirming the excellent condition and high consistency level of the instrument. Additionally, the high Cronbach's Alpha value is associated with high reliability of the research instrument [35].

3.4. Data Collection Procedure

Prior to the data collection procedure, an application was made to the Educational Planning and Policy Research Division, Ministry of Education Malaysia, to gain consent and approval regarding research implementation in selected educational contexts and institutions under its jurisdiction. After approval by the division (Reference: KPM.600-3/2/3-eras(14175)), the survey questionnaire was emailed to eleven experts along with information about the research and the letter of appointment. The evaluation conducted by experts employed a 5-point Likert scale to gauge levels of agreement, while their additional observations and recommendations were documented in writing. The collected written reviews were subsequently categorized and structured into a tabular matrix based on identified constructs and indicators. Experts were also invited to articulate their opinions, recommendations, and any suggestions regarding new or pre-existing constructs and indicators in designated spaces within the form provided.

3.5. Data Analysis Procedure

The numerical data obtained were processed using the Fuzzy-Delphi Method Analysis software, initially developed by Jamil [36] and subsequently updated by Jamil and Noh [37]. This software facilitated user-friendly data entry, allowing for automatic analysis of the inputted information. According to Jamil and Noh [37] the two fundamental prerequisites for this analysis are the Triangular Fuzzy Number and the Defuzzification Process. Yusof et al. [13] explain that the quantitative data analysis comprises four phases of defuzzification: (i) threshold value (d), (ii) percentage of experts' agreement, (iii) fuzzy evaluation, and (iv) average of fuzzy number and ranking.

According to Jamil and Noh [37] and Gengatharan et al. [38] the threshold for the average fuzzy number or score, also referred to as defuzzification (α-cut), is established at 0.5. Values that meet or exceed this threshold (≥ 0.5) are considered acceptable, while those falling below it (< 0.5) are deemed unacceptable. The calculation for the fuzzy score is given by the formula Amax = ¼ (m1 + 2m2 + m3). Furthermore, the threshold value (d) is set at ≤ 0.2, indicating that any value below this threshold is accepted. In terms of expert consensus, a percentage of agreement exceeding 75% is regarded as acceptable [13, 37]. The outcomes from all phases are crucial for determining the acceptance or rejection of each construct and indicator.

4. Results

This section presents the results from the FDM data collection according to the Threshold Value (d), Percentage of Experts' Agreement, and Average of Fuzzy Number and Ranking for the acceptance and rejection of the indicators for all four constructs under the Skills and Dispositions domains. The items that have achieved at least two out of the three phases in the overall FDM analysis are accepted and included as the indicators for the respective constructs. On the other hand, the items that did not achieve at least two out of the three crucial phases are rejected unless further supported by experts' written feedback.

4.1. Skills: Intercultural Collaboration (IC)

4.1.1. Analysis of Expert Consensus on Intercultural Collaboration Construct

In this Intercultural Collaboration construct, the items reviewed by the experts are presented in Table 3 below.

Table 3.
Items for Intercultural Collaboration Construct.

Number	Items (Indicators)
IC1	Understand and be aware of the importance of intercultural collaboration
IC2	Develop intercultural collaboration for self-improvement
IC3	Develop a partnership at the micro and macro levels
IC4	Develop a worldwide consciousness towards quality education for sustainable development
IC5	Integrate intercultural collaboration in ESL lessons
IC6	Assist students' understanding to collaborate with others from diverse backgrounds in English lessons.
IC7	Improve students' speaking skills for intercultural collaboration
IC8	Improve students' listening skills for intercultural collaboration
IC9	Improve students' understanding skills for intercultural collaboration
IC10	Foster mutual knowledge and share differences

Table 4 shows the FDM analysis of the construct.

Table 4.
Threshold value (d), percentage of experts' agreement, and defuzzification of the Intercultural Collaboration (IC) Construct.

Item/ Indicator	Triangular Fuzzy Numbers		Fuzzy Evaluation				Experts' Agreement	Items' Acceptance	Ranking
	Threshold Value, d	Percentage of Experts' Agreement, %	m1	m2	m3	Fuzzy Number (A)			
IC1	0.260	81.8%	0.573	0.773	0.900	0.748	ACCEPT	0.748	7
IC2	0.249	81.8%	0.536	0.736	0.882	0.718	ACCEPT	0.718	9
IC3	0.235	81.8%	0.518	0.718	0.873	0.703	ACCEPT	0.703	10
IC4	0.176	90.91%	0.555	0.755	0.909	0.739	ACCEPT	0.739	8
IC5	0.116	100.00%	0.627	0.827	0.964	0.806	ACCEPT	0.806	2
IC6	0.116	100.00%	0.627	0.827	0.964	0.806	ACCEPT	0.806	1
IC7	0.186	90.91%	0.573	0.773	0.918	0.755	ACCEPT	0.755	4
IC8	0.186	90.91%	0.573	0.773	0.918	0.755	ACCEPT	0.755	4
IC9	0.116	100.00%	0.627	0.827	0.964	0.806	ACCEPT	0.806	2
IC10	0.186	90.91%	0.573	0.773	0.918	0.755	ACCEPT	0.755	4

The analysis summarized in Table 4 evaluates the Intercultural Collaboration (IC) construct, establishing a threshold value (d) of ≤ 0.200 for item validity. The items IC4 (0.176), IC5 (0.116), IC6 (0.116), IC7 (0.186), IC8 (0.186), IC9 (0.116), and IC10 (0.186) fell within this valid threshold, receiving affirmation from expert reviewers. Notably, the experts' item agreement percentages were robust, with all items exceeding the necessary 75% threshold for acceptance: IC1 (81.8%), IC2 (81.8%), IC3 (81.8%), IC4 (90.91%), IC5 (100%), IC6 (100%), IC7 (90.91%), IC8 (90.91%), IC9 (100%), and IC10 (90.91%). Additionally, all items demonstrated defuzzification α-Cut values exceeding 0.5: IC1 (0.748), IC2 (0.718), IC3 (0.703), IC4 (0.739), IC5 (0.806), IC6 (0.806), IC7 (0.755), IC8 (0.755), IC9 (0.806), and IC10 (0.755). Despite IC1, IC2, and IC3 having threshold values above 0.200, their expert agreement rates and α-Cut values confirmed their acceptance. Consequently, all ten items in the Intercultural Collaboration construct were validated and accepted within the proposed framework.

4.2. Skills: Diversity and Inclusivity (DI)

4.2.1. Analysis of Expert Consensus on Diversity and Inclusivity Construct

The items reviewed by the experts for the Diversity and Inclusivity construct are presented in Table 5 below.

Table 5.
Items for Diversity and Inclusivity Construct.

Number	Items (Indicators)
DI1	Understand and be aware of diversity in the ESL classroom
DI2	Understand and be aware of inclusivity in the ESL classroom
DI3	Understand and be aware of diversity in the real world
DI4	Understand and be aware of inclusivity in the real world
DI5	Respect people from diverse backgrounds
DI6	Respect people from different genders, with abilities, and disabilities
DI7	Integrate knowledge on diversity and inclusivity in ESL lessons
DI8	Assist students' understanding of diversity and inclusivity in ESL lessons
DI9	Promote equity among the main races and minorities in ESL lessons
DI10	Promote human rights and sustainability in ESL lessons

Table 6 below shows the FDM analysis of the construct.

Table 6.
Threshold value (d), percentage of experts' agreement, and defuzzification of the Diversity and Inclusivity (DI) Construct.

Item/ Indicator	Triangular Fuzzy Numbers		Fuzzy Evaluation				Experts' Agreement	Items' Acceptance	Ranking
	Threshold Value, d	Percentage of Experts' Agreement, %	m1	m2	m3	Fuzzy Number (A)			
DI1	0.180	90.9%	0.609	0.809	0.936	0.785	ACCEPT	0.785	6
DI2	0.187	90.9%	0.591	0.791	0.927	0.770	ACCEPT	0.770	8
DI3	0.186	90.9%	0.573	0.773	0.918	0.755	ACCEPT	0.755	10
DI4	0.187	90.91%	0.591	0.791	0.927	0.770	ACCEPT	0.770	9
DI5	0.116	100.00%	0.627	0.827	0.964	0.806	ACCEPT	0.806	5
DI6	0.116	100.00%	0.627	0.827	0.964	0.806	ACCEPT	0.806	3
DI7	0.075	100.00%	0.664	0.864	0.982	0.836	ACCEPT	0.836	1
DI8	0.180	90.91%	0.609	0.809	0.936	0.785	ACCEPT	0.785	7
DI9	0.116	100.00%	0.627	0.827	0.964	0.806	ACCEPT	0.806	3
DI10	0.100	100.00%	0.645	0.845	0.973	0.821	ACCEPT	0.821	2

The data analysis presented in Table 6 outlines the evaluation of the Diversity and Inclusivity construct, where the threshold value (d) for validity was established at ≤ 0.200. Ten items, designated as DI1 through DI10, were assessed, with their respective threshold values reported as DI1 (0.180), DI2 (0.187), DI3 (0.186), DI4 (0.187), DI5 (0.116), DI6 (0.116), DI7 (0.075), DI8 (0.180), DI9 (0.116), and DI10 (0.100). Each item received validation from expert reviews, confirming their acceptance. Furthermore, expert agreement percentages for these items were notably high, with DI5, DI6, DI7, DI9, and DI10 achieving 100% agreement, while the remaining items obtained at least 90.9% agreement, all exceeding the minimum acceptance threshold of 75%. Analysis of the defuzzification α-Cut values indicated that all items surpassed the threshold of 0.5, with values recorded as DI1 (0.785), DI2 (0.770), DI3 (0.755), DI4 (0.770), DI5 (0.806), DI6 (0.806), DI7 (0.836), DI8 (0.785), DI9 (0.806), and DI10 (0.821). Consequently, the overall results indicate that all ten items within the Diversity and Inclusivity construct were deemed valid and accepted by the experts.

4.3. Dispositions: Sensitivity towards Beliefs and Practices (SBP)

4.3.1. Analysis of Expert Consensus on Sensitivity towards Beliefs and Practices Construct

In this Sensitivity towards Beliefs and Practices construct, the items reviewed by the experts are presented in Table 7 below.

Table 7.
Items for Sensitivity towards Beliefs and Practices Construct

Number	Items (Indicators)
SBP1	Understand and be aware of different religious beliefs and practices
SBP2	Understand and be aware of different ethnic beliefs and practices
SBP3	Respect multiple beliefs and practices of others in global and local communities
SBP4	Integrate empathy in ESL lessons
SBP5	Integrate knowledge of multiple beliefs and practices in ESL lessons
SBP6	Develop a classroom environment that allows students to express individual beliefs and practices
SBP7	Discuss various beliefs and practices in ESL lessons
SBP8	Assist students' understanding of multiple beliefs and practices in ESL lessons
SBP9	Show sensitivity and empathy towards others' emotions

Based on the data collected, Table 8 presents the FDM analysis of the construct.

Table 8.
Threshold value (d), percentage of experts' agreement, and defuzzification of the Sensitivity towards Beliefs and Practices (SBP) Construct.

Item/ Indicator	Triangular Fuzzy Numbers		Fuzzy Evaluation				Experts' Agreement	Items' Acceptance	Ranking
	Threshold Value, d	Percentage of Experts' Agreement, %	m1	m2	m3	Fuzzy Number (A)			
SBP1	0.164	90.9%	0.627	0.827	0.945	0.800	ACCEPT	0.800	3
SBP2	0.180	90.9%	0.609	0.809	0.936	0.785	ACCEPT	0.785	6
SBP3	0.164	90.9%	0.627	0.827	0.945	0.800	ACCEPT	0.800	3
SBP4	0.164	90.91%	0.627	0.827	0.945	0.800	ACCEPT	0.800	2
SBP5	**0.293**	**72.73%**	**0.536**	**0.736**	**0.873**	**0.715**	**REJECT**	**0.715**	**8**
SBP6	0.075	100.00%	0.664	0.864	0.982	0.836	ACCEPT	0.836	1
SBP7	0.125	100.00%	0.591	0.791	0.945	0.776	ACCEPT	0.776	7
SBP8	0.235	81.82%	0.518	0.718	0.873	0.703	ACCEPT	0.703	9
SBP9	0.180	90.91%	0.609	0.809	0.936	0.785	ACCEPT	0.785	5

The data analysis presented in Table 8 examines the construct of sensitivity towards beliefs and practices, focusing on the validity and acceptance of various items within this framework. A threshold value (d) was established at ≤ 0.200, wherein items SBP1 (0.164), SBP2 (0.180), SBP3 (0.164), SBP4 (0.164), SBP6 (0.075), SBP7 (0.125), and SBP9 (0.180) were identified as valid based on expert evaluations. Further analysis revealed that eight items surpassed the required expert agreement threshold of 75%, with SBP6 achieving the highest agreement at 100%. The corresponding acceptance percentages for each item were SBP1 (90.9%), SBP2 (90.9%), SBP3 (90.9%), SBP4 (90.91%), SBP6 (100%), SBP7 (100%), SBP8 (81.82%), and SBP9 (90.91%). Defuzzification α-Cut values were also assessed, revealing all items—with SBP1 (0.800), SBP2 (0.785), SBP3 (0.800), SBP4 (0.800), SBP5 (0.715), SBP6 (0.836), SBP7 (0.776), SBP8 (0.703), and SBP9 (0.785)—exceeding the minimum requirement of 0.5. Notably, while SBP5 exceeded the threshold value, its expert agreement percentage fell short of 75%, leading to its rejection. Conversely, SBP8 was accepted due to its expert agreement of 82.82% and adequate defuzzification score, establishing a total of eight accepted items, while SBP5 was excluded from the construct.

4.4. Dispositions: Value All Perspectives (VP)

4.4.1. Analysis of Expert Consensus on Value All Perspectives Construct

The items reviewed by the experts for the construct Value All Perspectives are presented in Table 9 below.

Table 9.
Items for Sensitivity towards Beliefs and Practices Construct.

Number	Items (Indicators)
VP1	Understand and be aware of different perspectives
VP2	Respect own/personal perspectives
VP3	Respect different perspectives from other people
VP4	Value own/personal perspectives
VP5	Value different perspectives from other people
VP6	Develop social responsibility
VP7	Listen to others' opinions and views
VP8	Respond appropriately to others' opinions and views
VP9	Assist students in valuing all perspectives in ESL lessons

According to the data gathered from the employment of FDM, Table 10 displays the FDM analysis of the respective construct.

Table 10.
Threshold value (d), percentage of experts' agreement, and defuzzification of the Value All Perspectives (VP) Construct.

Item/ Indicator	Triangular Fuzzy Numbers		Fuzzy Evaluation				Experts' Agreement	Items' Acceptance	Ranking
	Threshold Value, d	Percentage of Experts' Agreement, %	m1	m2	m3	Fuzzy Number (A)			
VP1	0.125	100.0%	0.609	0.809	0.955	0.791	ACCEPT	0.791	7
VP2	0.187	90.9%	0.591	0.791	0.927	0.770	ACCEPT	0.770	9
VP3	0.125	100.0%	0.591	0.791	0.945	0.776	ACCEPT	0.776	8
VP4	0.164	90.91%	0.627	0.827	0.945	0.800	ACCEPT	0.800	6
VP5	0.116	100.00%	0.627	0.827	0.964	0.806	ACCEPT	0.806	5
VP6	0.075	100.00%	0.664	0.864	0.982	0.836	ACCEPT	0.836	1
VP7	0.100	100.00%	0.645	0.845	0.973	0.821	ACCEPT	0.821	3
VP8	0.100	100.00%	0.645	0.845	0.973	0.821	ACCEPT	0.821	3
VP9	0.075	100.00%	0.664	0.864	0.982	0.836	ACCEPT	0.836	1

The data analysis presented in Table 10 evaluates the "Value All Perspectives construct, demonstrating that all nine items achieved a threshold value (d) of ≤ 0.200, thereby qualifying as valid based on expert assessments. The items, identified as VP1 (0.125), VP2 (0.187), VP3 (0.125), VP4 (0.164), VP5 (0.116), VP6 (0.075), VP7 (0.100), VP8 (0.100), and VP9 (0.075), were unanimously accepted. Additionally, expert agreement percentages were exceptionally high across all items, with values reaching 100% for VP1, VP3, VP5, VP6, VP7, VP8, and VP9, while VP2 and VP4 attained 90.9%. This consensus among experts surpassed the minimum requirement of 75%. Furthermore, the defuzzification α-Cut values were all above the stipulated threshold of 0.5, with recorded values of VP1 (0.791), VP2 (0.770), VP3 (0.776), VP4 (0.800), VP5 (0.806), VP6 (0.836), VP7 (0.821), VP8 (0.821), and VP9 (0.836). Collectively, these findings affirm the validity of all nine items within the Value All Perspectives construct, indicating strong endorsement from the expert panel.

The FDM successfully gathered the experts' consensus on the indicators representing the selected constructs. Table 11 displays the items that have been accepted and rejected through the data analysis method.

Table 11.
The results from the item analysis of the Fuzzy Delphi.

Constructs	Original Number of Items	Number of Items Rejected	Items for Fuzzy Delphi Method (FDM)	Item(s) Rejected	Items Retained	Number of Items after the FDM Analysis
Intercultural Collaboration	10	-	IC1, IC2, IC3, IC4, IC5, IC6, IC7, IC8, IC9, IC10	-	IC1, IC2, IC3, IC4, IC5, IC6, IC7, IC8, IC9, IC10	10
Diversity and Inclusivity	10	-	DI1, DI2, DI3, DI4, DI5, DI6, DI7, DI8, DI9, DI10	-	DI1, DI2, DI3, DI4, DI5, DI6, DI7, DI8, DI9, DI10	10
Sensitivity towards Beliefs and Practices	9	1	SBP1, SBP2, SBP3, SBP4, SBP5, SBP6, SBP7, SBP8, SBP9	SBP5	SBP1, SBP2, SBP3, SBP4, SBP6, SBP7, SBP8, SBP9	8
Value Perspectives	9	-	VP1, VP2, VP3, VP4, VP5, VP6, VP7, VP8, VP9	-	VP1, VP2, VP3, VP4, VP5, VP6, VP7, VP8, VP9	9
Total	38	1	-	-	-	37

The item or indicator rejected from the Fuzzy Delphi method analysis is SBP5 *Integrate knowledge of multiple beliefs and practices in ESL lessons*, which was deemed to have less significance in representing the Sensitivity towards Beliefs and Practices construct.

In addition to the aforementioned aspects, the comments and recommendations provided by experts were carefully incorporated to refine the items or indicators. The insights and evaluations from these eleven experts concerning the indicators formulated for the constructs significantly enhanced both the content and face validity of the instrument, as well

as the overarching framework proposed. The engagement of experts in verifying the appropriateness of indicators that correspond to the constructs constitutes a critical approach to face validation [39]. Table 12 presents a comprehensive overview of the feedback received pertaining to the constructs and indicators associated with the development of the proposed ESL Global Competence Framework. Amendments were implemented in accordance with the observations and recommendations shared by the experts.

Table 12.
Experts' comments and suggestions.

Construct	Comment and Suggestion	Remark
Intercultural Collaboration	Change the words used to suit the domain Some indicators are unclear and need to be rephrased: IC2, IC3, IC10 Specify the type of partnerships in IC3	FDM Analysis Result: None rejected Rephrased all accepted items using words to suit the domain 'skill' and to show a clearer gist: IC1, IC2, IC3, IC4, IC5, IC6, IC7, IC8, IC9, and IC10 Rephrased to address the connection of the indicators to the ESL context
Diversity and Inclusivity	Change the words used to suit the domain Check the model to tailor it with specifics that are unique to the ESL environment Change the word 'inclusivity' to 'inclusion' Redundant: D15, D16	FDM Analysis Result: None rejected Changed 'inclusivity' to 'inclusion' Rephrased all accepted items using words to suit the domain 'skill' and to show a clearer gist: DI1, DI2, DI3, DI4, DI5, DI6, DI7, DI8, DI9, and DI10 Rephrased to address the connection of the indicators to the ESL context DI5 and DI6 are important but redundant, and hence are rephrased
Sensitivity towards Beliefs and Practices	Change the words used to suit the domain Level of sensitivity is important too, as some may feel more sensitive than others. ESL teachers' job is not to teach religion but to respect diversity Be clear on how to impart in the ESL environment Be clearer: SBP1, SBP2 SBP6, SBP7, and SBP8 are redundant: can be rephrased and two items can be excluded	FDM Analysis Result: Rejected SBP5 Rejected SBP7 and SB8 as suggested by the experts due to redundancy Rephrased all accepted items using words to suit the domain 'disposition' and to show a clearer gist: SBP1, SBP2, SBP3, SBP4, SBP6, and SBP9 Rephrased to address the connection of the indicators to the ESL context
Value Perspectives	Change the words used to suit the domain Overlap: VP3, VP5, VP7 Not all perspectives should be valued. Some perspectives are intolerant and should not be allowed in classrooms – rethink VP9. Overall, I think there may be too many items to make this a useful tool. You may want to try to combine some and limit the tool to fewer than 20 items overall if possible. The dimension is OK, but the connection to the ESL environment is not clear	FDM Analysis Result: None rejected Rejected VP9 as suggested, since not all perspectives should be valued Changed 'Value All Perspectives' to 'Value Perspectives' Rephrased all accepted items using words to suit the domain 'disposition' and to show a clearer gist: VP1, VP2, VP3, VP4, VP5, VP6, VP7, and VP8 Rephrased to address the connection of the indicators to the ESL context

The FDM analysis result concludes that the experts accepted all four constructs: Intercultural Collaboration, Diversity, and Inclusion for the Skills domain, whereas Sensitivity towards Beliefs and Practices, and also Value Perspectives for the Dispositions domain. Initial analysis showed that one item (SBP5) from the 38 proposed items was rejected, leaving 37 items as indicators to represent the proposed framework. In light of additional written recommendations and justifications from experts concerning ambiguous indicators illustrated in Table 12 three additional items (SBP7, SBP8, and VP9) were ultimately rejected. The experts identified these rejected items as either redundant or insufficiently representative of the underlying constructs. Consequently, there is a general consensus among the experts to retain 34 items or indicators, while four items have been rejected. Following this review, the accepted items were rephrased and reorganized to enhance clarity and precision. A comprehensive summary of the rejected items as per the overall findings from the FDM analysis is provided in Table 13 below:

Table 13.
The items rejected by the Fuzzy-Delphi experts' suggestions

Construct	Item Total from FDM Experts' Review (Survey)	Experts' Suggestion for Rejection	Item Total for Rejection	Final Item Total
Intercultural Collaboration (IC)	10	-	-	10
Diversity and Inclusion (DI)	10	-	-	10
Sensitivity towards Beliefs and Practices (SBP)	8	SBP7: Discuss various beliefs and practices in ESL lessons SBP8: Assist students' understanding on multiple beliefs and practices in ESL lessons	2	6
Value Perspectives (VP)	9	VP9: Assist students to value perspectives in ESL lessons	1	8
Total	37		3	34

5. Discussion

This research is part of a larger study that aims to identify the key indicators representing the constructs and domains essential for the development of global competence, specifically within ESL contexts. The primary focus is on the domains of skills and dispositions, which are vital for constructing a comprehensive ESL Global Competence Framework [29]. To achieve expert consensus, the research employs FDM analysis, highlighting its systematic and iterative nature, which helps reduce uncertainty in expert agreement by integrating both quantitative and qualitative data.

All indicators pertaining to the Intercultural Collaboration and Diversity and Inclusivity constructs were unanimously accepted, demonstrating a strong agreement among experts (100% for certain indicators) and reinforcing the relevance and significance of these indicators in fostering global competence in ESL learners [19]. In contrast, the Sensitivity towards Beliefs and Practices construct resulted in the rejection of one item, SBP5, indicating a need for precision in aligning indicators with the specified goals of inclusivity and diversity, as suggested by experts. The analysis indicates that threshold values (d) were successfully employed to validate the constructs, with a threshold set at ≤ 0.200. For example, items within the Intercultural Collaboration construct maintained substantial percentage agreements between 81.8% and 100%, providing robust support for their inclusion. This emphasizes the importance of consensus in educational frameworks [21, 40]. Interestingly, expert feedback prompted the rephrasing of multiple indicators for enhanced clarity and context alignment, exemplifying how iterative expert engagement elevates the overall quality of educational frameworks [38]. Ultimately, the FDM analysis confirmed 34 well-defined items for inclusion as indicators, underscoring the collective aim of equipping ESL students with essential skills and dispositions for navigating a globalized world effectively. These findings underscore the necessity for clearly defined global competence constructs within ESL education to enhance students' global engagement and intercultural understanding, effectively equipping them to navigate increasingly complex global landscapes [41].

To reiterate, the findings of this research underscore the vital need for a Global Competence Framework tailored to English as a Second Language (ESL) education, which encompasses essential skills and dispositions necessary for learners to successfully navigate diverse cultural environments. The finalized constructs of Intercultural Collaboration, Diversity and Inclusion, Sensitivity towards Beliefs and Practices, and Value Perspectives are accepted for their importance to be addressed and explored in ESL education. The indicators representing the constructs are significant to assist both teachers and students' global competence development. A globally competent individual should have a good understanding of interculturality, the dimensions of diversity and inclusion, and the ability to react appropriately to local and global issues [9, 24, 26].

Additionally, the research not only aligns with prior studies indicating the significance of integrating global competence within educational frameworks, as highlighted by Haryadi and Aminuddin [2] and Yaccob et al. [3], but also addresses the existing gap in the literature regarding the application of the global competence paradigm specifically within the Malaysian English education system. This research enriches the theoretical framework and provides valuable insights for practical applications in ESL curricula, aligning with the essential competencies highlighted in contemporary global education discussions. Most importantly, the indicators that are designed specifically with consideration to the ESL context could be used to facilitate the teaching and learning of English to be more meaningful and aligned with the United Nations' Sustainable Development Goals and Global Education [14, 16].

6. Limitations of the Research

This research faces several limitations, primarily due to the limited number of studies and previous research focusing specifically on global competence within the context of ESL or English language education. Furthermore, the scarcity of resources and data for adapting existing constructs and indicators posed significant challenges in developing a comprehensive framework. Despite these limitations, the creation of new constructs and indicators for the ESL Global Competence Framework highlights the innovative nature of this research and underscores its contribution to advancing the field.

7. Recommendations

This research lays the groundwork for future studies on an essential and pressing subject because there does not currently appear to be much research that particularly examines the development of ESL and English language teachers' global competence. Hence, a well-structured module offering clear guidance on how ESL teachers can explicitly engage with the area of global competence, along with practical use of the available global competence framework, would significantly aid in the development of both their global competence and their ability to teach in a globally competent manner. Future research in the realm of global competence development among educators in ESL contexts should consider incorporating the finalized constructs and indicators identified in this study, ensuring a more comprehensive approach. Moreover, policymakers should contemplate the integration of additional global competence elements, placing a stronger emphasis on skills and dispositions related to intercultural collaboration, diversity and inclusion, sensitivity toward beliefs and practices, and value perspectives within ESL curricula.

8. Conclusion

Consequently, the findings advocate for the enhancement of global competence among Malaysian ESL teachers, thereby contributing to the ongoing discourse surrounding quality education and sustainable development goals. This research serves as a significant addition to the literature by enriching the existing body of research on global competence and its implications for ESL teaching practices within the local Malaysian context. Furthermore, the developed ESL Global Competence Framework and the findings will contribute significantly to curriculum development and pedagogical practices, aligning with sustainability goals in education as outlined by the United Nations. This study's outcomes are expected to furnish actionable insights for integrating global competence in ESL curricula, thereby enhancing educational quality and efficacy on a global scale.

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Appendix 1

Table 1.
The demographic details of the experts.

Panel	Institution	Specialisation
Associate Professor (Senior Lecturer)	Virginia Commonwealth University, United States of America	Globally Competent Teaching Continuum Developer, Global Competence Expert
Dr. (Senior Lecturer)	Universiti Pendidikan Sultan Idris, Perak, Malaysia	Curriculum integration, DDR
Associate Professor (Senior Lecturer)	Universiti Pendidikan Sultan Idris, Perak, Malaysia	TESL (Experience supervising research on the conceptualisation of the Orang Asli Culture in ELT)
Dr. (Senior Lecturer)	Universiti Malaysia Pahang, Pahang, Malaysia	Educational linguistics, TESL
Associate Professor (Senior Lecturer)	University of Missouri-St Louis, United States of America	Teacher education, Teaching for global readiness scale, Global teacher education
Professor (Senior Lecturer)	Burapha University, Thailand	Global Englishes, Multicultural education, Teacher professional development, Teacher education
Dr. (Senior Lecturer)	Al-Madinah International University, Malaysia	Teacher education, Teacher professional development
Dr. (Senior Lecturer)	Universiti Kuala Lumpur, Kuala Lumpur, Malaysia	CEFR-aligned, Teacher education, Teacher awareness
Dr. (Senior Lecturer)	IPG Kampus Dato' Razali Ismail, Terengganu, Malaysia	CEFR-aligned, Teacher education, Teacher awareness
Dr. (Senior Lecturer)	Institute of Teacher Education International Languages Campus, Kuala Lumpur, Malaysia	Teacher education, Teacher training programme
Associate Professor (Senior Lecturer)	Shantou University, China	Multicultural education, Global Englishes, Language policy
rHammao.hammad86@hotmail.com	niversity, Palestine	