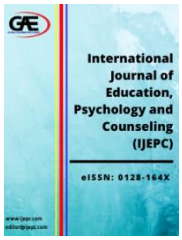
International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 9 Issue 56 (December 2024) PP. 492-511
DOI 10.35631/IJEPC.956031



INTERNATIONAL JOURNAL OF EDUCATION, PSYCHOLOGY AND COUNSELLING (IJEPC)
www.ijepc.com

THE APPLICATION OF FUZZY DELPHI METHOD IN DESIGN AND DEVELOPMENT OF ENGLISH-SPEAKING SKILLS FORMATIVE ASSESSMENT TOOL FOR STUDENTS WITH AUTISM SPECTRUM DISORDER (ASD)

Amal Mohamad Hassan[1*], Low Hui Min[2]

[1] School of Educational Studies, Universiti Sains Malaysia
Email: amalhassan.hlp@gmail.com
[2] School of Educational Studies, Universiti Sains Malaysia
Email: lowhm@usm.my
[*] Corresponding Author

Article Info:

Article history:
Received date: 24.10.2024
Revised date: 10.11.2024
Accepted date: 12.12.2024
Published date: 23.12.2024

To cite this document:

Hassan, M. H. & Low, H. M. (2024). The Application of Fuzzy Delphi Method in Design and Development of English Speaking Skills Formative Assessment Tool for Students with Autism Spectrum Disorder (ASD). *International Journal of Education, Psychology and Counseling, 9* (56), 492-511.

DOI: 10.35631/IJEPC.956031

Abstract:

Communication in children with Autism Spectrum Disorder (ASD) is often significantly impacted by various neuropsychological and psychological challenges, which also affect their behavior and social interactions. These challenges manifest in various ways, including difficulties in understanding and using verbal and non-verbal communication, interpreting social cues, and engaging in reciprocal social interactions. One of the primary challenges faced by children with ASD is their difficulty in communicating effectively. This barrier makes it hard for them to convey their needs, thoughts, and emotions, often leading to frustration and impacting their ability to form meaningful connections with others. The inability to express themselves clearly not only complicates their interpersonal relationships but also limits their interaction with their environment. Given these communication difficulties, developing effective strategies to enhance the English-speaking skills of students with ASD becomes crucial. This study focuses on the design and development of formative assessments tool of English-speaking skills using the application of Fuzzy Delphi Method (FDM). This tool is integrated with the project-based learning (PBL) approach, which immerses students in real-world tasks aimed at cultivating critical thinking, creativity, and problem-solving skills. Ten experts are involved in designing and developing the contents of the instruments, rubric and performance descriptors which are the main elements of the formative assessment tool. This formative assessment tool, specifically designed for students with ASD, offers continuous feedback, enabling educators to modify their teaching methods according to the unique needs of each student for better learning outcomes.

International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 9 Issue 56 (December 2024) PP. 492-511
DOI 10.35631/IJEPC.956031

Keywords:

Fuzzy Delphi Method, Autism Spectrum Disorder, English-Speaking Skills, Formative Assessment, Project-Based Learning

Introduction

The design and development phase are the main components to Design and Development Research (DDR). Akker et al. (2006) emphasized its importance, noting that this phase is crucial because the products being developed, whether modules, models, tools, or curricula, must be highly detailed and relevant to ensure they effectively meet the needs of the intended target audience. Highlighting the intricacies of this phase is essential to guarantee that the final outputs are both practical and beneficial for real-world application. Numerous DDR researchers have utilised a diverse array of methods during the design and development phase to address the complexities of their projects. These methods encompass a wide range of qualitative and quantitative approaches. Qualitative methods include techniques such as interviews and focus groups, which allow for in-depth exploration of experiences and perceptions. Quantitative methods, on the other hand, involve surveys and experiments that provide measurable data. Additionally, iterative design processes, prototyping, and user testing are frequently incorporated to refine and improve products or systems, ensuring they meet user needs effectively and efficiently throughout the development process. This diversity in methodology highlights the adaptability and innovation inherent in DDR, allowing researchers to tailor their approaches to the specific needs and contexts of their studies. In this study, the Fuzzy Delphi Method (FDM) is employed during the design and development phase.

The FDM is used to design and develop a formative assessment tool aimed at enhancing English-speaking skills among children with Autism Spectrum Disorder (ASD) through project-based learning (PBL). It is crucial to customise an instructional approach to cater to the uniqueness requirements of students with ASD. Sari et al. (2021) stated that teachers must ensure that the ASD students' speaking abilities progress in alignment with their individual natural speed. Focusing on English language skills for students with ASD is particularly important for several reasons. Firstly, developing their language skills is crucial for academic success across subjects. Strong language skills can enhance a student's ability to comprehend and produce written and spoken content, which is vital for their overall learning and communication (Whitby & Mancil, 2009).

Secondly, developing English language skills can help students with ASD improve their social integration. Effective communication skills are essential for interacting with peers, teachers, and the broader community. For students with ASD, improving these skills can help reduce social isolation and increase participation in collaborative activities (Bellon et al., 2000). Furthermore, focusing on English can provide a structured framework for assessing and developing language skills. Formative assessments in English can help teachers identify specific areas where students need support and monitor their progress over time. This targeted approach can be advantageous for students with ASD, who often have distinct learning needs that require personalised instructional strategies (Roth et al., 2014). By addressing these individual needs, the approach ensures that students receive tailored support, enhancing their engagement and overall learning outcomes. This individualised focus is crucial in helping

International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 9 Issue 56 (December 2024) PP. 492-511
DOI 10.35631/IJEPC.956031
students with ASD overcome communication and social interaction challenges, ultimately fostering their academic and personal development in a more inclusive learning environment.

Literature Review

The literature review will be discussed in five sections, namely English-speaking skills, formative assessment, Autism Spectrum Disorder (ASD), project-based learning (PBL), and Fuzzy Delphi Method (FDM).

English-speaking Skills

Among English language skills, speaking skills are among the essential competencies that every student, including those with Autism Spectrum Disorder (ASD), should master within the curriculum. Khamkhien (2010) stated that speaking skill is the utmost significance among those four skills that associated with English language. It had been stated in the preliminary National Education Blueprint (2013 - 2025) that the Ministry of Education of Malaysia had aligned four skills of English language, (1) speaking skill; (2) reading skill; (3) listening skill; and (4) writing skill with additional of language art to enhance English language proficiency as English serves as a global medium for communication (Kirkpatrick, 2017; Jindapitak, 2019). Speaking skills can be described as the abilities that enable individuals to effectively communicate. These skills enable individuals to effectively communicate information through spoken language in a manner that is comprehensible to the recipient.

According to Howarth (2001), the concept of speaking is characterised as a reciprocal exchange where genuine viewpoints, facts, or emotions are communicated. This perspective utilises a top-down approach to understanding spoken texts, viewing them as a collaborative effort among multiple individuals within a shared temporal and contextual framework. This understanding emphasises the importance of interaction and cooperation in effective communication, highlighting the dynamic nature of spoken exchanges in various social settings. Due to the fact that language must be produced in a spontaneous and unplanned manner, English-speaking skills considered to be a vital yet challenging skill for individuals learning English language (Zaki et al., 2017; Abugohar & Yunus, 2018; Zakaria et al., 2019; Azlan et al., 2019; Al- Tamimi et al., 2020). Hassan et al. (2021) stated that Malaysian students face various challenges in improving their spoken English proficiency. As for students with ASD, they commonly conveyed with the problems of communication, echolalia, literal interpretation, speech delay and other language problems, speaking skills had suited the role to overcome these issues. Social attention and regulation problems are observed as manifestations of communicative difficulties, with around 25% of children diagnosed with ASD failing to acquire spoken communicative language skills (Strid et al., 2013).

Given that language and communication are fundamental to fostering social interactions in human life, it is essential to implement strategies that assist children with ASD in developing both verbal and non-verbal communication skills (Flippin et al., 2010). By enhancing their communication abilities, children with ASD can build more meaningful connections and navigate social situations with greater confidence. Ratto et al. (2020) found that ASD children who spoke more than one language had fewer problems with their executive functioning and had fewer repetitive behaviours than other ASD children who spoke just one language. Rushda et al. (2021) highlighted that the development of speaking skills is a crucial cornerstone in the preparation of students for the acquisition of literacy skills, encompassing both reading and writing skills.

International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 9 Issue 56 (December 2024) PP. 492-511
DOI 10.35631/IJEPC.956031

The development of English-speaking skills is fundamentally anchored in mastering its core components. Each component plays a crucial role in building a strong foundation for effective communication. By focusing on these elements, learners can enhance their ability to express themselves clearly and confidently in English. Brown (2004) in his book titled 'Language Assessment: Principles and Classroom Practices' aligned six components of assessing speaking skills. Those are (1) fluency; (2) vocabulary; (3) grammar; (4) pronunciation; (5) comprehension; and (6) task. Figure 1 shows the components of speaking skills according to Brown (2004).

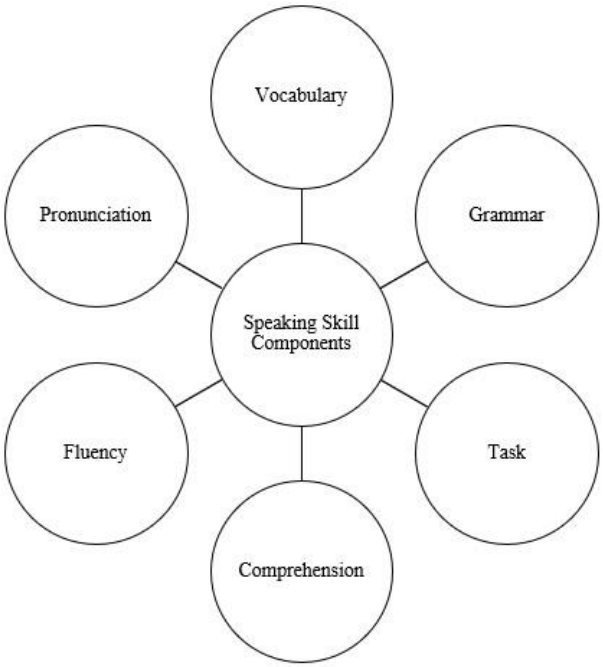


Figure 1: Components of Speaking Skill

Source: Language Assessment: Principles and Classroom Practices by Brown, H. D., 2004, pp 140-183. Copyright 2004 Pearson Education.

Formative Assessment

Assessment is crucial in pinpointing areas where students can improve. Formative assessment is when teachers tailor their teaching to better suit the needs of the pupils (William, 2011). Ahmad Zaidi (2019) and Masters (2014) indicated that the purpose of formative assessment is to gather information about student learning throughout the teaching and learning process. Formative assessment refers to assessments used by both teachers and students during the teaching and learning process where the feedback obtained from these assessments is utilised to continuously adjust instruction and learning strategies, aiming to enhance student performance in relation to established learning standards (Popham, 2016). This dynamic approach ensures that teaching is responsive to the needs of learners, ultimately improving educational outcomes. According to Banks (2012), formative assessment may be described as a deliberate and structured evaluation process that provides instructional guidance for both teachers and students. Additionally, it can function as a means of self-evaluation and may not be utilised for the purpose of grade determination.

Formative assessment is often referred to as "assessment for learning". "Assessment for learning" is considered as a formative assessment when the evidence and the feedback obtained

International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 9 Issue 56 (December 2024) PP. 492-511
DOI 10.35631/IJEPC.956031
by teachers and students function as a way to adapt information to better address the learning needs of students. This adaptive process allows both parties to reflect on the learning progress and make necessary adjustments in teaching strategies or study habits, ensuring that instruction is responsive and aligned with the students' individual needs. This continuous adaptation enhances the effectiveness of the learning process, contributing to improved student outcomes. Wiliam (2017) believed that "assessment for learning" is a process that involves gathering and interpreting evidence to focus on how students learn, with the goal of helping them improve their learning outcomes. This approach emphasises the importance of understanding students' current levels of knowledge and skills, providing timely feedback, and making instructional adjustments to better support their progress. By centering on students' learning processes, it ensures that the assessment serves as a tool for promoting continuous development rather than simply measuring performance. Therefore, "assessment for learning" becomes part of classroom practice and effective planning for the entire teaching and learning session, as well as promoting students' learning (Black & Wiliam, 2009).

In Malaysian primary school, students are taught English-speaking skills and being accessed through Classroom Based Assessment, also known as Pentaksiran Bilik Darjah (PBD) under the subject of English language. PBD represents a transformation in Malaysia's educational evaluation system through a more holistic and continuous evaluation approach prioritising student development beyond formal exams and encouraging a broader learning experience (Primus & Mosin, 2021). Students with Autism Spectrum Disorder (ASD) in Integrated Special Education Program (PPKI) also undergo this evaluation. The students' performance level in English language subject is reported using TP (Tahap Penguasaan) which is performance descriptors ranging from TP1 to TP6. Each TP has its own set of descriptors that define the mastery levels of students in terms of knowledge, skills, and values outlined in the curriculum. These descriptors provide clear indicators of students' progress, helping teachers assess their development across various competencies.

PBD is the practice of gathering information on a student's growth, progress, talents, and achievements through ongoing assessment that takes place during teaching and learning sessions. This PBD is one of the core assessments in Malaysian School Based Assessment along with Central Assessment (also known as Pentaksiran Pusat). The non-academic assessments in the School Based Assessment including the Psychometric Assessment and Co-curricular Sports Physical Activity Assessment (PAJSK). The primary purpose of PBD is not to establish a comparative measure of mastery across students, but rather to assess the progress of individual students in their learning journey, while simultaneously providing teachers with valuable insights to enhance their instructional practices. The data collected from this assessment will be utilised by teachers to strategize subsequent interventions aimed at facilitating the advancement of student learning.

Figure 2 exhibits that the Ministry of Education Malaysia (KPM) has incorporated the practice of formative assessment into its School Based Assessment initiative, which was initiated in 2011. The formative assessment is a component of the assessment framework within the educational context. It is typically employed subsequent to the completion of each learning standard in the pedagogy and curriculum framework. Formative assessment encompasses a range of strategies, including questioning, quizzes, assignments, projects, practical exercises, presentations, and observations (Dudek et al., 2019; Ahmedi, 2019).

International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 9 Issue 56 (December 2024) PP. 492-511
DOI 10.35631/IJEPC.956031

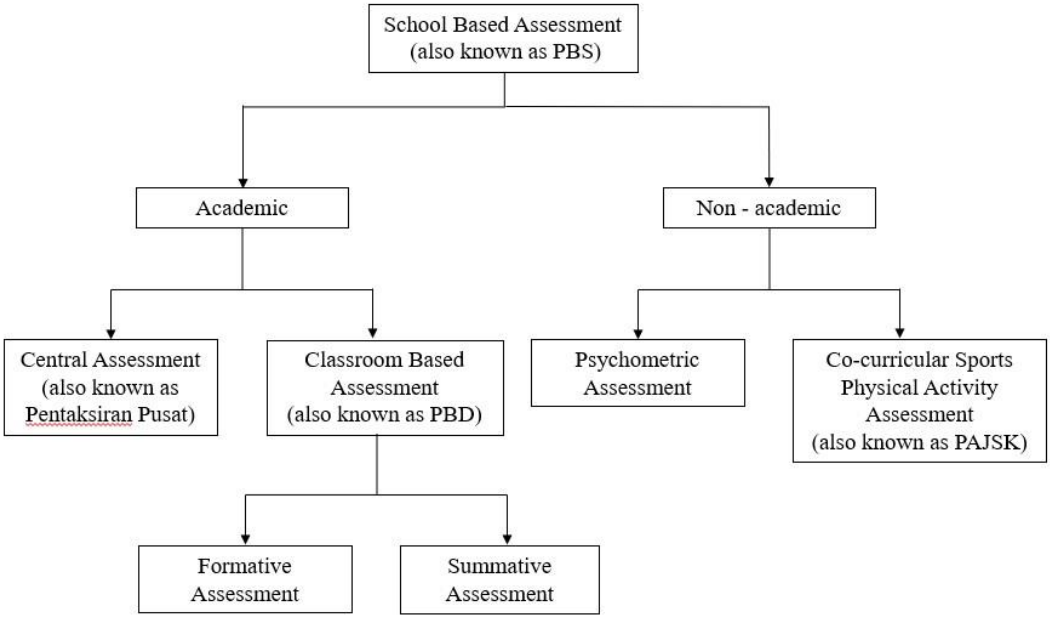


Figure 2: Components of School Based Assessment in Malaysia

Source: Surat Pekeliling Ikhtisas Kementerian Pendidikan Malaysia Bilangan 3 Tahun 2023

Autism Spectrum Disorder

By year 2024, 102 246 children with disabilities are currently enrolled in Malaysian schools with 58 481 in primary schools and 43 765 in secondary schools (Malaysia Educational Statistics, 2024). Special education encompasses several categories of students. According to the Education (Special Education) Regulations (2013), students eligible for special education are those certified by medical practitioners as having disabilities in areas such as visual, hearing, speech, physical impairments, learning difficulties, or a combination of these conditions. Commonly, Autism Spectrum Disorder (ASD) is classified under learning difficulties or disabilities. Corresponding to Low et al. (2018), nearly 25% of students enrolled in special education programs in Malaysian schools are diagnosed with ASD.

ASD, also referred to as autism, is a developmental disorder that impacts a child's growth and is typically identified before the age of three, often around 30 months (Badzis & Zaini, 2014; Paulraj et al., 2016). Boyle et al. (2011) highlighted that early childhood diagnoses of ASD now surpass those of Down's syndrome, cerebral palsy, hearing impairments, and visual impairments. Children with ASD face significant challenges in communication and social interactions, which hinder their ability to engage effectively with others and limit the development of social relationships beyond their close environment (Norfishah, 2015). These difficulties, encompassing both verbal and non-verbal communication, often affect their overall social integration and emotional well-being. Additionally, children with ASD may exhibit repetitive behaviors, further complicating their ability to form meaningful connections with peers (Happe & Frith, 2020; Hannan et al., 2020).

Hashim et al. (2021) found that students with ASD often struggle to respond and interact with others due to challenges in acquiring new vocabulary, which are compounded by their cognitive disabilities. However, experts in the field of special education suggest that students with ASD often learn English more quickly than their mother tongue. This accelerated acquisition is attributed to the linguistic characteristics of the English language, which is

International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 9 Issue 56 (December 2024) PP. 492-511
DOI 10.35631/IJEPC.956031
generally more straightforward and has fewer syllables, making it easier for students with ASD to grasp. Consequently, this can lead to enhanced communication skills and engagement with English compared to other languages.

Muharikah et al. (2022) stated that some students with ASD demonstrated strong mastery of English-speaking skills. Various components of speaking skills, including vocabulary, have been identified as areas where students with ASD may demonstrate proficiency (Barletta, 2018; Yusoff et al., 2019). Additionally, grammar (Yusoff et al., 2019; Bradley, 2019) and pronunciation (Padmadewi & Artini, 2017) are also recognised as key aspects of mastery for these students. Understanding these areas of strength can inform teaching strategies aimed at enhancing overall communication skills in students with ASD. In addition, Setiadi (2017) found that students with ASD can greatly benefit from the teaching and learning process when English teachers communicate with them effectively, both directly and indirectly, within the classroom environment. This dual approach fosters better understanding and engagement, enhancing the overall learning experience and helping students with ASD to develop their communication skills more effectively. Creating an inclusive and supportive atmosphere through targeted communication strategies is essential for their academic success and social interaction.

Project-based Learning

The principle of authentic learning serves as the foundation for this study, which focuses on learning through project work. As mentioned by Guskey (2010), project work is a method employed in formative assessment to gather information regarding students' progress in learning. Recently, project work in pedagogy terms have always been referred to project-based learning (PBL). The background of PBL is rooted in the ideas of Kilpatrick (1918), who emphasised that engaging students in literacy within evocative contexts facilitates the development of background knowledge and promotes personal growth. His perspective highlights the importance of contextualised learning experiences that allow students to connect their educational pursuits with real-life situations, fostering both cognitive and emotional development. Hynek (2017) defined PBL as an educational model where students engage in well-defined projects as the primary means to acquire knowledge outlined in the curriculum.

Hovey and Ferguson (2014) emphasised that key elements of PBL include experiential learning, investigating real-life problems, collaboration among students, and the creation of a final product. This approach promotes active engagement and enhances critical thinking skills by allowing students to apply their knowledge in practical contexts. Ngereja and Andersen (2020) proposed that goal setting is a crucial process in the successful implementation of PBL. To enhance the effectiveness of PBL, goals must be clearly defined, allowing students to concentrate on completing tasks and ultimately producing high-quality end products. By establishing specific objectives, teachers can guide students towards achieving meaningful outcomes in their projects.

In alignment with 21st-century learning goals outlined in the Malaysian Education Blueprint (PPPM) 2013-2025, PBL has emerged as a vital approach to enhance student learning (Rushda et al., 2021). This method fosters student autonomy, increases learning interest, develops collaboration skills, and improves project planning abilities, along with many other essential competencies. By prioritising these skills, PBL prepares students for the demands of the modern educational landscape. In fact, the Malaysian Ministry of Education (KPM) had

International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 9 Issue 56 (December 2024) PP. 492-511
DOI 10.35631/IJEPC.956031
introduced the approach of PBL to the government schools in the year of 2006 (Machmudi et al., 2013). The integration of PBL pedagogy within educational institutions is essential for achieving the goal of cultivating high-quality human capital in the context of 21st-century learning (Tiantong & Siksen, 2013; Sandra et al., 2020). This approach not only enhances students' skills and knowledge but also aligns with the educational objectives necessary for preparing learners to thrive in a rapidly changing world. In addition, Mohd Huzaimi et al. (2020) indicated that the focus of the world educational system nowadays has been directed towards higher level thinking skills (KBAT) and 21st century learning whereby Malaysia had transformed its education system from exam-oriented to holistic assessment.

Methodology

The Fuzzy Delphi Method (FDM) is systematically structured to design and develop constructs and items for this study. Originally introduced by Kaufman and Gupta (1988), FDM combines fuzzy theory with the traditional Delphi method (Murray et al., 1985), creating a robust decision-making approach. It utilises expert opinions to gather and analyse structured data, aiming for consensus on specific topics (Yousuf, 2007). By integrating these approaches, FDM facilitates a more refined and accurate development of constructs and items, ensuring they are comprehensive, valid, and aligned with the research objectives. It is also particularly useful for refining concepts or evaluating frameworks, making it ideal for studies requiring expert insight and agreement on complex issues. Padzil et al. (2021) noted that expert consensus is frequently achieved through the FDM for various applications, including module prototyping, software and hardware development, and the design of instructional materials and learning strategies. The use of FDM in this context allows for iterative feedback and modification, enhancing the reliability and effectiveness of the English-speaking skills formative assessment tool that being developed.

In the development phase, FDM was used to get a group of experts to agree that each component and element from the previous stage should be confirmed, evaluated, rejected, or added (Padzil et a., 2021; May et al., 2022). This was done before the prototype of the tool was made. The strength of this method was that it used a heterogeneous of experts to figure out and confirm that the parts and elements chosen for the development of the end product were right for the study that was done. Saido et al. (2018) identified three main criteria used to evaluate and either approve or reject an item accepted by experts. These include, (1) the Triangular Fuzzy Numbers section, which establishes interconnected relationships (Hsieh et al., 2004); (2) the Defuzzification Process, which assesses the significance of the score in relation to the item's importance (Abdelgawad & Fayek, 2011; Mourhir et al., 2014); and (3) the item being considered acceptable if over 75% of the expert group approves it (Benitez et al., 2007).

Experts' Profile

To design and develop the formative assessment tool for English-speaking skills tailored to students with Autism Spectrum Disorder (ASD) through project-based learning (PBL) in Malaysian primary schools, a group of ten (10) experts was selected to participate in the Fuzzy Delphi Method (FDM) process. These experts provided input in constructing the necessary constructs and items to ensure that the tool was appropriate for the target students, incorporating expert consensus to create a well-rounded and effective assessment tool. Philip (2000), as cited in Ramlan and Ghazali (2018), suggested that the FDM is appropriately applied with a group of 7 to 10 experts. The FDM employed in this study engaged ten experts from various fields, including special education, Teaching English as a Second Language (TESL),

International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 9 Issue 56 (December 2024) PP. 492-511
DOI 10.35631/IJEPC.956031

child psychiatry, speech therapy, and clinical psychology. Importantly, the experts were selected based on their specialised knowledge but were kept anonymous from each other. This anonymity was maintained to ensure unbiased and independent input, allowing each expert to provide honest feedback without being influenced by the opinions of others during the assessment tool design process.

Table 1: Demography of The Experts

Expert	Expertise	Position
1	Special Education	Deputy Director
2	Special Education	Lecturer
3	Special Education	Lecturer
4	Special Education and TESL	Lecturer
5	Special Education	Lecturer
6	Special Education	Lecturer
7	Child Psychiatry	Head of Psychiatry Department
8	Speech Therapy	Speech Therapist
9	Clinical Psychology	Lecturer
10	Special Education	Excellent Teacher

Instrument

In this phase, the researcher develops the constructs and items for the formative assessment tool by aligning them with the Dokumen Standard Kurikulum dan Pentaksiran (DSKP) from the Kurikulum Standard Sekolah Rendah Pendidikan Khas (KSSRPK), integrated with the six components of English-speaking skills that had been aligned by Brown (2004) and the literature reviews. During this phase, the experts receive both a consent form from the Ethical Department of Universiti Sains Malaysia and the Fuzzy Delphi Method (FDM) instrument prepared by the researcher. This instrument, designed with a seven-point Likert scale, allows the experts to select the best option according to their views, provide feedback, offer critiques, and suggest improvements to the constructs and items of the formative assessment tool for English-speaking skills. This collaborative process is essential for refining the tool to better meet the needs of students with ASD. The FDM instrument is composed of three key sections, (A) demographic data; (B) the design of formative assessment instruments; and (C) the design of formative assessment rubrics and performance descriptors. The entire instrument comprises 8 constructs and 107 items, carefully designed to gather expert feedback for the development of a comprehensive tool to assess English-speaking skills in students with ASD. This structured approach ensures that all relevant areas are thoroughly addressed and refined based on expert opinions.

Research Procedure

As this study involved 10 experts in designing and developing the content of the English-speaking skills formative assessment tool, these experts were contacted in advance to obtain their permission. Then, the official letter of appointment as an expert and the Fuzzy Delphi Method (FDM) instrument had been sent through email to each of the experts. After the experts received the letter, the researcher contacted them personally for the second time to brief them about the study and the content of the FDM instrument. The researcher gave one month for the experts to fill in the FDM instrument and consent form. After the data had been collected, it had been transferred into fuzzy number and analysed using Microsoft Excel.

International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 9 Issue 56 (December 2024) PP. 492-511
DOI 10.35631/IJEPC.956031

In the FDM, two key concepts are the Triangular Fuzzy Number and the defuzzification process. A Triangular Fuzzy Number is defined by three values: $m1$, $m2$, and $m3$, where $m1$ is the minimum value, $m2$ is the most likely value, and $m3$ is the maximum value. This number aids in converting linguistic variables into fuzzy numbers, using an h linguistic scale to facilitate the transition from qualitative assessments into measurable data during decision-making processes.

In evaluating the level of expert consensus, the threshold value d plays a crucial role. An item is accepted in the FDM if the threshold value d is less than or equal to 0.2. If the d value exceeds 0.2, the item can be rejected or subjected to a second round of evaluation, involving only the experts who initially disagreed. Additionally, the percentage of agreement among the experts must meet or exceed 75 percent for the item to be accepted, ensuring a high level of consensus within the expert group. Constructs or items failing to meet this consensus threshold should be rejected. Reaching the specified percentage of expert agreement indicates that a consensus among the experts has been successfully established. Figure 3 indicates the formula of the threshold value according to Chen (2000).

$$d(\acute{m}, \acute{n}) = \sqrt{\frac{1}{3}\left[(m1 - n1)^2 + (m2 - n2)^2 + (m3 - n3)^2\right]}$$

Figure 3: Formula Of Threshold Value

Source: A new method for the Fuzzy Delphi Method based on fuzzy sets and systems by Chen, S. M., 2000, pp 511-520. Copyright 2000 Fuzzy Sets and Systems, 112(3).

The subsequent step in the process is defuzzification, which aims to assist researchers in determining the necessity for a variable level and identifying the required sub-enablers. This ranking process helps generate the needed data based on expert consensus. Another important factor is the α-cut threshold value, which represents the midpoint between the fuzzy numbers [0] and [1]. This α-cut value is used during the defuzzification process. When the Average Fuzzy Number or Average Response score surpasses 0.5, it suggests that the construct or item is acceptable based on expert consensus. Conversely, if the score falls below 0.5, the construct or item should be rejected.

Research Findings

In order to evaluate the content of the formative assessment tool for English-speaking skills, the Fuzzy Delphi Method (FDM) is employed to gather evaluations and opinions from a panel of selected experts. The FDM instrument is divided into two sections, the first focuses on the design of the formative assessment instruments for English-speaking skills, while the second addresses the design of the assessment rubric and performance descriptors. In the design of the English-speaking skills formative assessment instruments' section, there are six (6) constructs. Those constructs are; (1) components of the instruments; (2) curriculum content; (3) selection of theme; (4) essential skills; (5) implementation opportunities; and (6) teacher's support facilities. In the design of the English-speaking skills formative assessment rubric and performance descriptors' section, there are two (2) constructs. The first one is the component of the rubric while the second one is the appropriate level of performance descriptors. Overall, there are a total of eight (8) constructs and hundred and seven (107) items. Table 2 shows the list of the sections and constructs that need to be evaluated by the experts.

International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 9 Issue 56 (December 2024) PP. 492-511
DOI 10.35631/IJEPC.956031

Table 2: Sections and Constructs in The FDM Instrument

Section	No.	Constructs
English-speaking skills formative assessment instruments	1	Components of the instruments
	2	Curriculum content
	3	Selection of theme
	4	Essential skills
	5	Implementation opportunities
	6	Teacher's support facilities
English-speaking skills formative assessment rubric and performance descriptors'	7	Component of the rubric
	8	Appropriate level of performance descriptors

Table 3 shows the result of the first construct which is the evaluation from the experts regarding the components of the English-speaking skills formative assessment tool. It shows the threshold value, expert consensus percentage, and fuzzy score. From the 16 items in this construct, only 14 items have remained. The remaining two items were rejected because the percentage of expert consensus fell below 75%. The items that had been rejected are the (1) goal; and (2) class assessment form. The accepted items had obtained the threshold value, *d* between 0.101 to 0.172, which are less than 0.2, indicating that the experts' opinions are sufficiently aligned. Meanwhile, the experts' consensus achieved are between 80 percent to 90 percent. For fuzzy score 'A', the scores are between 0.863 to 0.910. Overall, the 14 items that had been listed in Table 3 had achieved the expert group consensus.

Table 3: Experts' Consensus for Construct 1

No.	Item	Threshold Value	Expert Consensus Percentage	*m*1	*m*2	*m*3	Fuzzy Score (A)
1	Objectives	0.103	90%	0.800	0.940	0.990	0.910
2	Date/Time/Duration	0.172	80%	0.760	0.900	0.960	0.873
3	Content standards	0.132	80%	0.780	0.920	0.980	0.893
4	Learning standards	0.101	90%	0.780	0.930	0.990	0.900
5	Instruction for teachers	0.132	80%	0.780	0.920	0.980	0.893
6	Project-based learning (PBL) task	0.132	80%	0.800	0.930	0.980	0.903
7	Timeline for project implementation	0.101	90%	0.780	0.930	0.990	0.900
8	Media / material	0.132	80%	0.800	0.930	0.980	0.903
9	Enrichment activities	0.103	90%	0.800	0.940	0.990	0.910
10	Rubric of assessment	0.103	90%	0.800	0.940	0.990	0.910
11	Pre assessment test	0.166	80%	0.740	0.890	0.960	0.863
12	Post assessment test	0.166	80%	0.740	0.890	0.960	0.863
13	Performance descriptors	0.101	90%	0.780	0.930	0.990	0.900
14	Assessment form (individual)	0.128	80%	0.760	0.910	0.980	0.883

For the second construct, the experts need to evaluate the curriculum content of the English-speaking skills formative assessment tool. The items of the curriculum content are adopted from the components of English-speaking skills in the Dokumen Standard Kurikulum dan

International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 9 Issue 56 (December 2024) PP. 492-511
DOI 10.35631/IJEPC.956031

Pentaksiran (DSKP) Kurikulum Standard Sekolah Rendah Pendidikan Khas (KSSRPK) Year 1 to Year 6. Based on the findings, from 25 items, only 8 items are accepted by the experts. The accepted items had obtained the threshold value, *d* between 0.076 to 0.128, which are less than 0.2, indicating that the experts' opinions are sufficiently aligned. In the meantime, the experts' consensus achieved are between 80 percent to 100 percent. For fuzzy score 'A', the scores are between 0.880 to 0.917. Table 4 below shows 8 items that had achieved the expert group consensus.

Table 4: Experts' Consensus for Construct 2

No.	Item	Threshold Value	Expert Consensus Percentage	*m*1	*m*2	*m*3	Fuzzy Score (A)
1	Demonstrate understanding of oral texts by answering Wh-Questions (What, Who, Where When, Why, How) with guidance.	0.128	80%	0.760	0.910	0.980	0.883
2	Use simple English as the medium of conversations in daily routines.	0.118	80%	0.740	0.900	0.980	0.873
3	Communicate using simple sentences in order to buy items or services (with guidance).	0.076	100%	0.800	0.950	1.000	0.917
4	Communicate using simple sentences in order to express feelings (with guidance).	0.101	90%	0.780	0.930	0.990	0.900
5	Follow and give instructions and directions (going places) with guidance.	0.107	80%	0.720	0.890	0.980	0.863
6	Make polite requests using simple phrases.	0.118	80%	0.740	0.900	0.980	0.873
7	Thank someone using simple phrases.	0.128	80%	0.760	0.910	0.980	0.883
8	Exchange greetings using phrases.	0.082	90%	0.740	0.910	0.990	0.880

Table 5 shows the result of the third construct which is the selection of theme that should be included in the English-speaking skills formative assessment tool due to experts' consensus. From 33 items in this construct, only 10 items have remained. Those 33 items are adopted from Kurikulum Standard Sekolah Rendah Pendidikan Khas (KSSRPK). The 33 items represent themes from the English textbooks for Year 1 to Year 6 (Learning Difficulties), integrated with project-based learning (PBL) strategies. The other 23 items were rejected because the percentage of expert consensus was below 75%. On the other hand, the accepted items had

International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 9 Issue 56 (December 2024) PP. 492-511
DOI 10.35631/IJEPC.956031

obtained a threshold value, *d* between 0.073 to 0.159, which are less than 0.2, indicating that the experts' opinions are sufficiently aligned. Meanwhile, the percentage of experts' consensus achieved are between 80 percent to 100 percent. For fuzzy score 'A', the scores are between 0.853 to 0.907. Overall, the 10 items that had been listed in Table 5 had achieved the expert group consensus. These items are constructed to immerse students in meaningful, real-world projects that nurture their critical thinking, collaboration, and communication skills. By aligning with PBL, the themes aim to enhance student motivation and understanding by connecting classroom learning to practical applications, thereby supporting diverse learning needs and promoting inclusive education.

Table 5: Experts' Consensus for Construct 3

No.	Item	Threshold Value	Expert Consensus Percentage	*m*1	*m*2	*m*3	Fuzzy Score (A)
1	Greetings	0.159	80%	0.720	0.880	0.960	0.853
2	My family	0.094	90%	0.760	0.920	0.990	0.890
3	My home	0.094	90%	0.760	0.920	0.990	0.890
4	My classroom	0.073	100%	0.780	0.940	1.000	0.907
5	Good manners	0.151	80%	0.700	0.870	0.960	0.843
6	Clothes	0.129	90%	0.740	0.900	0.970	0.870
7	Colours	0.137	90%	0.760	0.910	0.970	0.880
8	Animals	0.128	80%	0.760	0.910	0.980	0.883
9	Places in school	0.159	80%	0.720	0.880	0.960	0.853
10	Shapes	0.128	80%	0.760	0.910	0.980	0.883

For the fourth construct, the experts need to evaluate the essential skills incorporated in the English-speaking skills formative assessment tool. Based on the findings, from 12 items, only 5 items are accepted by the experts. The accepted items had obtained the threshold value, *d* between 0.101 to 0.174, which are less than 0.2, indicating that the experts' opinions are in strong agreement. In the meantime, the expert group reached a consensus ranging from 80 percent to 90 percent. For fuzzy score 'A', the scores are between 0.873 to 0.9. Table 6 below shows 5 items that had achieved the expert group consensus.

Table 6: Experts' Consensus for Construct 4

No.	Item	Threshold Value	Expert Consensus Percentage	*m*1	*m*2	*m*3	Fuzzy Score (A)
1	Engage students in the process of open-ended inquiry and exploration.	0.118	80%	0.740	0.900	0.980	0.873
2	Makes connections between learning and real-world experiences in daily lives.	0.172	80%	0.760	0.900	0.960	0.873
3	Attention – provide involvement and stimulate curiosity.	0.172	80%	0.760	0.900	0.960	0.873

International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 9 Issue 56 (December 2024) PP. 492-511
DOI 10.35631/IJEPC.956031

4	An active student-centered form of instruction.	0.174	80%	0.780	0.910	0.960	0.883
5	Improving language skills.	0.101	90%	0.780	0.930	0.990	0.900

Table 7 shows the result of the fifth construct which is the evaluation from the experts regarding the implementation opportunities of the English-speaking skills formative assessment tool. From 5 items in this construct, only 3 items have remained. The remaining two items were rejected because the percentage of expert consensus was below 75%. The items that had been rejected are the (1) instrument is essential in order to assess and record students' progression in the context of English-speaking skills; and (2) instrument is beneficial for facilitating teachers and students in exploring the strategy of PBL. The accepted items had obtained the threshold value, *d* between 0.132 to 0.166, which are less than 0.2, showing that the experts' opinions are adequately aligned. Meanwhile, the expert group consensus achieved the percentage of 80 for those 3 items. For fuzzy score 'A', the scores are between 0.863 to 0.903. Overall, the 3 items that had been listed in Table 7 had achieved the expert group consensus.

Table 7: Experts' Consensus for Construct 5

No.	Item	Threshold Value	Expert Consensus Percentage	*m*1	*m*2	*m*3	Fuzzy Score (A)
1	The application of the instrument is highly pertinent to the current circumstance.	0.132	80%	0.800	0.930	0.980	0.903
2	The instrument promotes active student engagement in the classroom learning process.	0.166	80%	0.740	0.890	0.960	0.863
3	The instrument is capable of fostering students' learning creativity.	0.132	80%	0.780	0.920	0.980	0.893

For the sixth construct, the experts need to evaluate the teacher's support facilities needed in order to apply the English-speaking skills formative assessment tool effectively in diverse classroom settings. Based on the findings, from 5 items, all items are accepted by the experts. The accepted items had obtained the threshold value, *d* between 0.103 to 0.166, which are less than 0.2, indicating that the experts' opinions are in strong agreement. In the meantime, the expert group reached a consensus ranging from 80 percent to 90 percent. For fuzzy score 'A', the scores are between 0.853 to 0.910. Table 8 below shows all the items that had achieved the expert group consensus.

International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 9 Issue 56 (December 2024) PP. 492-511
DOI 10.35631/IJEPC.956031

Table 8: Experts' Consensus for Construct 6

No.	Item	Threshold Value	Expert Consensus Percentage	*m*1	*m*2	*m*3	Fuzzy Score (A)
1	A conducive physical environment.	0.103	90%	0.800	0.940	0.990	0.910
2	The infrastructure is sufficient and functional.	0.141	90%	0.780	0.920	0.970	0.890
3	Financial support to provide enough resources.	0.159	80%	0.720	0.880	0.960	0.853
4	Continuous training for teachers to improve the knowledge of formative assessment and PBL approach.	0.140	90%	0.800	0.930	0.970	0.900
5	Expanding cooperation network of various stakeholders to provide an assessment platform for students with ASD.	0.166	80%	0.740	0.890	0.960	0.863

Table 9 presents the results for the seventh construct, which reflects the experts' evaluations of the components of the rubric used in the English-speaking skills formative assessment tool. This construct has 6 items, and all of the items are accepted. Those items obtained the threshold value, *d* between 0.101 to 0.174, which are less than 0.2, showing that the experts' opinions are adequately aligned. Meanwhile, the expert group consensus achieved the percentage of 80 percent to 90 percent for those 6 items. For fuzzy score 'A', the scores are between 0.883 to 0.910. Overall, all of the items that had been listed in Table 9 had achieved the expert group consensus.

Table 9: Experts' Consensus for Construct 7

No.	Item	Threshold Value	Expert Consensus Percentage	*m*1	*m*2	*m*3	Fuzzy Score (A)
1	Vocabulary	0.128	80%	0.760	0.910	0.980	0.883
2	Pronunciation	0.172	80%	0.760	0.900	0.960	0.873
3	Fluency	0.132	80%	0.780	0.920	0.980	0.893
4	Comprehension	0.103	90%	0.800	0.940	0.990	0.910
5	Grammar	0.101	90%	0.780	0.930	0.990	0.900
6	Task	0.174	80%	0.780	0.910	0.960	0.883

Table 10 presents the final construct, requiring experts to determine the appropriate level of performance descriptors to be applied in the English-speaking skills formative assessment tool. Based on the findings, from 5 items, only 1 item is accepted by the experts. The other 4 items were rejected due to the percentage of experts' consensus is below 75%. Those other 4 items indicated performance descriptors' levels ranging from two levels to six levels. However, all of the experts agree that the best approach is to use only four levels for the performance

International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 9 Issue 56 (December 2024) PP. 492-511
DOI 10.35631/IJEPC.956031

descriptors. The accepted item achieved a threshold value of d = 0.132, which is below 0.2, indicating strong agreement among the experts' opinions for this item. In the meantime, the expert group reached a consensus of 80 percent for this item. For fuzzy score 'A', the score is 0.893.

Table 10: Experts' Consensus for Construct 8

No.	Item	Threshold Value	Expert Consensus Percentage	*m*1	*m*2	*m*3	Fuzzy Score (A)
1	1. Limited 2. Fair 3. Good 4. Very Good	0.132	80%	0.780	0.920	0.980	0.893

Conclusion and Recommendations

In order to design and develop this English-speaking skills formative assessment tool through project-based learning (PBL), this study was guided by an evaluation of the content based on expert consensus. The data was analysed by using Fuzzy Delphi Method (FDM). As a result, all materials in this formative assessment tool achieved a satisfying experts consensus percentage of above 75 percent, threshold value, d of below 2.0, and fuzzy scores of above 0.5. Since this study focuses on English-speaking skills, it is recommended that future researchers design and develop tools that emphasise other skills, such as writing, reading, or listening. These tools could inclusively offer learning resources for non-verbal students with Autism Spectrum Disorder (ASD) as well. This study provided with a systematic approach for reaching experts' consensus on evaluating the content of an instrument. By utilising the FDM, researchers were able to establish a structured process for content evaluation, ensuring that the instrument's components were rigorously assessed and refined based on the collective insights and agreement of the experts' panel. This method enabled a comprehensive review, thereby strengthening the validity and reliability of the instrument's content. In conclusion, the English-speaking skills formative assessment tool is now ready for implementation among students with ASD in Malaysian primary schools. The tool has been thoughtfully developed and rigorously evaluated to meet the unique learning needs of these students, ensuring it effectively supports their language development. Therefore, by incorporating PBL strategies and experts' consensus, the tool aims to enhance students' speaking abilities and foster a more inclusive and supportive learning environment.

Acknowledgements

Special thanks are extended to Universiti Sains Malaysia, School of Educational Studies, for their invaluable support in the successful completion of this paper. Gratitude is also owed to the Ministry of Education, Malaysia, for sponsoring the first author.

References

Abdelgawad, M., & Fayek, A. R. (2011). Fuzzy Reliability Analyzer: Quantitative Assessment of Risk Events in The Construction Industry Using Fuzzy Fault-Tree Analysis. *Journal of Construction Engineering and Management, 137*(4), 294-302.

International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 9 Issue 56 (December 2024) PP. 492-511
DOI 10.35631/IJEPC.956031

Abugohar, M. A., & Yunus, K. (2018). Difficulties Encountered by Arab Students in Pronouncing English Correctly. *International Journal of Education and Literacy Studies, 6*(4), 93-100.

Ahmad Zaidi Hussin. (2019). *Model Amalan Pentaksiran Formatif dalam Kalangan Guru-Guru Kemahiran Hidup Bersepadu* (Doctoral dissertation). Retrieved from etd.uum.edu.my

Ahmedi, V. (2019). Teachers' Attitudes and Practices Towards Formative Assessment in Primary Schools. *Journal of Social Studies Education Research, 10*(3), 161-175.

Akker, J. V. D., Gravemeijer, K., McKenney, S. & Nieveen, N. (2006). *Educational Design Research*. London and New York: Routledge.

Al-Tamimi, N. O., Abudllah, N., & Bin-Hady, W. R. A. (2020). Teaching Speaking Skill to EFL College Students through Task-Based Approach: Problems and Improvement. *British Journal of English Linguistics, 8*(2), 113-130.

Azlan, N. A. B., Zakaria, S. B., & Yunus, M. M. (2019). Integrative Task-Based Learning: Developing Speaking Skill and Increase Motivation via Instagram. *International Journal of Academic Research in Business and Social Sciences, 9*(1), 620-636.

Badzis, M. & Zaini, M. F. (2014). Early Identification and Intervention of Autism Spectrum Disorder Among Young Children. *IIUM Journal of Educational Studies, 2*(1), 67-89.

Banks, S. R. (2012). *Classroom Assessment: Issues and Practices*. Waveland Press.

Barletta, N. P. (2018). High-Functioning Autism and Second Language Development: A Case Study. *Interamerican Journal of Psychology, 52*(2), 183-193.

Bellon, M. L., Ogletree, B. T., & Harn, W. E. (2000). Relevance of Literacy to Individuals With Developmental Disabilities: Implications for Instruction and Future Research. *Focus on Autism and Other Developmental Disabilities, 15*(4), 180-187.

Benitez, J. M., Martín, J. C., & Román, C. (2007). Using Fuzzy Number for Measuring Quality of Service in The Hotel Industry. *Tourism Management, 28*(2), 544-555.

Black, P., & Wiliam, D. (2009). Developing The Theory of Formative Assessment. *Educational Assessment, Evaluation and Accountability, 21*, 5-31.

Boyle, C. A., Boulet, S., Schieve, L. A., Cohen, R. A., Blumberg, S. J., Yeargin-Allsopp, M., Visser, S., & Kogan, M. D. (2011). Trends in The Prevalence of Developmental Disabilities in US Children, 1997–2008. *Pediatrics, 127*(6), 1034-1042.

Bradley, M. (2019). Case Study: Second Language Acquisition with Asperger Syndrome in A University Setting. *Research in Pedagogy, 9*(2), 166-180.

Brown, H. D. (2004). *Language Assessment: Principles and Classroom Practices*. White Plains, NY: Pearson Education.

Chen, S. M. (2000). A New Method for The Fuzzy Delphi Method Based on Fuzzy Sets and Systems. *Fuzzy Sets and Systems, 112*(3), 511-520.

Dudek, C. M., Reddy, L. A., Lekwa, A., Hua, A. N., & Fabiano, G. A. (2019). Improving Universal Classroom Practices through Teacher Formative Assessment and Coaching. *Assessment for Effective Intervention, 44*(2), 81-94.

Education (Special Education) Regulations. (2013).

Flippin, M., Reszka, S. S. & Watson, L. R. (2010). Effectiveness of The Picture Exchange Communication System (PECS) on Communication and Speech for Children with Autism Spectrum Disorders: A Meta-Analysis. *American Journal of Speech-Language Pathology, 19*(2), 178-195.

Guskey, T. R. (2009). Mastery Learning. *21st Century Education: A Reference Handbook, 1*, 194-202.

International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 9 Issue 56 (December 2024) PP. 492-511
DOI 10.35631/IJEPC.956031

Hannan, A., Satari, N. A., Abu, K., & Yunus, F. (2020). The Challenge of Managing Children with Autism From Fathers' Perspectives. *Humanities, 8*(3), 367-379.

Happe, F., & Frith, U. (2020). Annual Research Review: Looking Back to Look Forward Changes in The Concept of Autism and Implications for Future Research. *Journal of Child Psychology and Psychiatry, 61*(3), 218-232.

Hashim, H. U., Yunus, M. M., & Norman, H. (2021). English As Secondary Language Learning and Autism Spectrum Disorder: The Obstacles in Teaching and Learning The Language. *Arab World English Journal, 12*(2), 22-30.

Hassan, I., Mohd Zamzam, I. A., Latiff Azmi, M. N., & Abdullah, A. T. H. (2021). Development of English Speaking Skills through Task-Based Learning Among Primary School Students in Malaysia. *Theory and Practice in Language Studies, 11*(11), 1499-1506.

Hovey, K. A. & Ferguson, S. L. (2014). Teacher Perspectives and Experiences: Using Project-Based Learning with Exceptional and Diverse Students. *Curriculum and Teaching Dialogue, 16* (1 & 2), 77 – 90.

Howarth, P. (2001). Process Speaking: Preparing to Repeat Yourself. *Modern English Teacher, 10*(1), 39-44.

Hsieh, T. Y., Lu, S. T., & Tzeng, G. H. (2004). Fuzzy MCDM Approach for Planning and Design Tenders Selection in Public Office Buildings. *International Journal of Project Management, 22*(7), 573-584.

Hynek, P. (2017). Project-Based Learning in Geography. In *Current Topics in Czech and Central European Geography Education* (pp. 129-143). Springer, Cham.

Jindapitak, N. (2019). English As An ASEAN Lingua Franca and The Role of Nativeness in English Education in Thailand: Moving Toward The ASEAN Economic Community (AEC*). English Today, 35*(2), 36-41.

Khamkhien, A. (2010). Teaching English Speaking and English Speaking Tests in The Thai Context: A Reflection from Thai Perspective. *English Language Teaching, 3*(1), 184-190.

Kirkpatrick, A. (2017). Language Education Policy Among The Association of Southeast Asian Nations (ASEAN). *European Journal of Language Policy, 9*(1), 7-25.

Low, H. M., Lee, L. W., & Che Ahmad, A. (2018). Pre-Service Teachers' Attitude Towards Inclusive Education for Students With Autism Spectrum Disorder in Malaysia. *International Journal of Inclusive Education, 22*(3), 235-251.

Machmudi Isa, N. I. M., & Abdullah, M. S. (2013). Pembelajaran Berasaskan Projek: Takrifan, Teori dan Perbandingannya dengan Pembelajaran Berasaskan Masalah. *CREAM-Current Research in Malaysia, 2*(1), 181-194.

Malaysia Educational Statistics. (2024).

Masters, G. N. (2014). *Assessment: Getting to The Essence*. ACER.

May, Y. S., Ahmad, N. A., Anal, A., Beram, S., Gengatharan, K., Yasin, A. A., Noor, N., Ramalu, R. R., & Senin, N. (2022). Application of Fuzzy Delphi Method in Evaluating The Content of Dyscalculia Module. *Driving Creativity & Innovation in Global Crisis, 1*.

Ministry of Education (MOE). (2013). *National Education Blueprint (2013-2025).* Putrajaya: Malaysian Ministry of Education.

Ministry of Education (MOE). (2023). Pemerkasaan Pentaksiran Berasaskan Sekolah Mulai Sesi Akademik 2022/2023. In *Surat Pekeliling Ikhtisas Kementerian Pendidikan Malaysia Bilangan 3 Tahun 2023.* Putrajaya: Malaysian Ministry of Education.

International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 9 Issue 56 (December 2024) PP. 492-511
DOI 10.35631/IJEPC.956031

Mohd Huzaimi Abdul Manap, Zolkepli Haron, & Norasmah Othman. (2020). Penilaian Pelaksanaan Program Pentaksiran Alternatif Sekolah Rendah (PASR) di Sekolah Rendah Pendidikan Khas Integrasi. *Jurnal Pendidikan Malaysia, 45* (1(SI)), 9-16.

Mourhir, A., Rachidi, T., & Karim, M. (2014). River Water Quality Index for Morocco Using A Fuzzy Inference System. *Environmental Systems Research, 3*(1), 1-12.

Muharikah, A., Li, M., & Roberts, J. (2022). A Scoping Review of Teaching and Learning of English As An Additional Language Among Autistic Individuals. *Malaysian Journal of Learning and Instruction, 19*(2), 1-35.

Murray, T. J., Pipino, L. L., & Van Gigch, J. P. (1985). A Pilot Study of Fuzzy Set Modification of Delphi. *Human Systems Management, 5*(1), 76-80.

Norfishah Mat Rabi (2015). *Rahsia dan Keunikan Personaliti Kanak-kanak Autistik di Malaysia*. Malaysia: Penerbit USM.

Ngereja, B., Hussein, B., & Andersen, B. (2020). Does Project-Based Learning (PBL) Promote Student Learning? A Performance Evaluation. *Education Sciences, 10*(11), 1–15.

Padmadewi, N. N., & Artini, L. P. (2017). Teaching English to A Student with Autism Spectrum Disorder in Regular Classroom in Indonesia. *International Journal of Instruction, 10*(3), 159-176.

Padzil, M. R., Abd Karim, A., & Husnin, H. (2021). Employing DDR to Design and Develop A Flipped Classroom and Project Based Learning Module to Applying Design Thinking in Design and Technology. *International Journal of Advanced Computer Science and Applications, 12*(9).

Paulraj, S. J. P. V., Alwi, N. A. B., & Vetrayan, J. (2016). Emotional Behaviour Among Autism and Typically Developing Children in Malaysia. *Procedia-Social and Behavioral Sciences, 222*, 28-35.

Popham, W. J. (2016). *The ABCs of Educational Testing: Demystifying The Tools That Shape Our Schools*. Corwin Press.

Primus, V. W., & Mosin, M. (2021). Pengurusan Pentaksiran Bilik Darjah Murid Berkeperluan Khas dalam Program Pendidikan Inklusif di Sekolah Rendah. *Malaysian Journal of Social Sciences and Humanities (MJSSH), 6*(8), 59-68.

Ramlan Mustapha & Ghazali Darusalam. (2018). *Aplikasi Kaedah Fuzzy Delphi dalam Penyelidikan Sains Sosial*. Kuala Lumpur: Penerbit Universiti Malaya.

Ratto, A. B., Potvin, D., Pallathra, A. A., Saldana, L., & Kenworthy, L. (2020). Parents Report Fewer Executive Functioning Problems and Repetitive Behaviors in Young Dual-Language Speakers with Autism. *Child Neuropsychology, 26*(7), 917-933.

Roth, P. L., BeVier, C. A., Switzer, F. S., & Schippmann, J. S. (2014). Meta-Analyzing The Relationship Between Grades and Job Performance. *Journal of Applied Psychology, 81*(5), 548-556.

Rushda Mohd Riduan, Faridah Yunus & Lilia Halim (2021). Persepsi Guru Prasekolah Terhadap Pembelajaran Berasaskan Projek dan Aspek Pemerolehan Bahasa Kanak-Kanak. *Jurnal Dunia Pendidikan, 3*(2), 524-539.

Saido, G. A. M., Siraj, S., DeWitt, D., & Al-Amedy, O. S. (2018). Development of An Instructional Model for Higher Order Thinking in Science Among Secondary School Students: A Fuzzy Delphi Approach. *International Journal of Science Education, 40*(8), 847-866.

Sandra, G., Arif, H. A., Salleh, N. S. M., & Noor, A. I. M. (2020). A Module for The Teaching of Ornamentation, Visual Arts Subject KSSM: An Analysis of Necessity. *International Journal of Academic Research in Progressive Education and Development, 9*(2), 192-204.

International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 9 Issue 56 (December 2024) PP. 492-511
DOI 10.35631/IJEPC.956031

Sari, D. F., Gea, E. R., & Fajrina, D. (2021). The Listening Skill of Autistic Students in Learning English Through Total Physical Response. *Studies in English Language and Education, 8*(1), 34-46.

Setiadi, I. B. (2017). Teacher Talk in Teaching English for Students with Autism Spectrum Disorder (ASD). *Jurnal Penelitian Pendidikan, 34*(1), 15-24.

Strid, K., Heimann, M., Gillberg, C., Smith, L., & Tjus, T. (2013). Deferred Imitation and Social Communication in Speaking and Nonspeaking Children with Autism. *Focus on Autism and Other Developmental Disabilities, 28*(4), 230-240.

Tiantong, M., & Siksen, S. (2013). The Online Project-Based Learning Model Based on Student's Multiple Intelligence. *International Journal of Humanities and Social Science, 3*(7), 204-211.

Whitby, P. S., & Mancil, G. R. (2009). Academic Achievement Profiles of Children with High Functioning Autism and Asperger Syndrome: A Review of The Literature. *Education and Training in Developmental Disabilities, 44*(4), 551-560.

Wiliam, D. (2011). What Is Assessment for Learning?. *Studies in Educational Evaluation, 37*(1), 3-14.

Wiliam, D. (2017). Assessment and Learning: Some Reflections. *Assessment in Education: Principles, Policy & Practice, 24*(3), 394-403.

Yousuf, M. I. (2007). Using Experts' Opinions through Delphi Technique. *Practical Assessment, Research, and Evaluation, 12*(1), 4.

Yusoff, Y. M., Salehuddin, K., Abdullah, I. H., & Toran, H. (2019). English Morphosyntactic Performance of A High-Functioning ASD Child: Implications on ELT. *Malaysian Journal of Learning and Instruction, 16*(1), 155-179.

Zakaria, N., Hashim, H., & Yunus, M. M. (2019). A Review of Affective Strategy and Social Strategy in Developing Students' Speaking Skill. *Creative Education, 10*(12), 3082-3090.

Zaki, M. H. S., Yunus, M. M., & Hashim, H. (2017). The Use of Audio Visual Aids in Developing Pupils' Speaking Skills: Malaysian Context. *Asian Social Science Journal, 4*(1), 165-172.