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Usability Evaluation of Activity Model through Chinese Children's Song to Enhance Culture Appreciation

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Abstract

Preserving cultural heritage is essential to maintain diversity, promote understanding between cultures, and foster a sense of identity and belonging among communities. As a cultural expression, music has been used for centuries to preserve cultural heritage and traditions. Education plays an important role in maintaining a culture even though it is no longer relevant nowadays. Music is an element that is often associated with culture. The purpose of this study is to evaluate the Usability of an Activity Model through Chinese Children's Song to Enhance Culture Appreciation. This research uses the Fuzzy Delphi Technique (FDM) as a data collection method. The study respondents were 50 randomly selected experts among music educators. The usability evaluation demonstrated the model's suitability based on five criteria: ease of learning, efficiency, ease of recall, error prevention, and user-friendliness based on the prototype model that had been developed before. These criteria were assessed across element usability, classification, list presentation, relationships, and overall model functionality.

Keywords : Culture appreciation, Activity model, Chinese Children's Song, Usability evaluation

INTRODUCTION

Today many of us live in a world where multiculturalism exists (James & Howard, 2020). In our day-to-day lives, we co-exist with people from many different backgrounds and cultures (Han & Han, 2019). Same situation goes in China (Morriseau & Fowler, 2023). These societies encompass various races, religions, customs, traditions, perspectives, and values (James & Howard, 2020).

Learning about different cultures helps children develop an understanding and appreciation for the diversity of human experiences, traditions, and perspectives (Limaye, Johnstone & Kayama, 2024). An everyday-life example of how to talk to children about cultural diversity is by making comparisons between people or things that are equally enjoyable (Kezar & Elrod, 2020). Our cultural backgrounds influence everything we think, say, and do, yet we often remain unaware of its impact (Han & Han, 2019).

Music has the power to go beyond language barriers and bring people from different cultures and backgrounds together (Davis, 2005). Based on him also, it can also serve as a powerful tool for preserving cultural heritage and traditions. Music can play a vital role in celebrating diversity and keeping cultural traditions alive (Chen-Hafteck, 2007).

Objectives

Evaluating the Usability of an Activity Model through Chinese Children's Song to Enhance Culture Appreciation

PROBLEM STATEMENT

Music has the ability to join individuals from various societies and foundations (Davis, 2005). It can likewise assume an imperative part in safeguarding social legacy and customs (Nethsinghe, 2012). By commending variety through music, we can advance comprehension and appreciation among societies and cultivate a feeling of character and having a place among networks (Cattien & Stopford, 2023). We genuinely must keep on perceiving the significance of social legacy and use music as an instrument to protect it for people in the future. Even so, not all teachers are able to use music as a medium to teach let alone raise children's awareness of culture (Campbell, 2015).

Music is an element that is often associated with culture (Nethsinghe, 2012). This is because one of the elements found in a culture is music (Welch & McPherson, 2018). This is added when each culture has its own concept of music (Morriseau & Fowler, 2023). As in China, each ethnic group represents each culture, and each ethnic group has its own music (Chen-Hafteck, 2007). Teachers need to take advantage of this element of music as a teaching medium to increase children's appreciation of culture (Barry, 2017). The lack of teaching materials and tools from a musical aspect is also a constraint to the process of using music as a medium for teaching cultural appreciation to children (Offorma, 2016). The lack of talent in the field of music is also one of the factors that lead to the reduction of music as a teaching medium, not to mention the teaching of cultural appreciation (Shawer, 2010). Therefore, guidance or training should be given to educators to enable them to teach using music even if they do not have many skills about music (Matiisen et al., 2019).

Therefore, researchers develop an activity model to help educators and even parents to use Chinese children's songs to increase children's appreciation of culture. In order to ensure that the model that has been developed can be used, the researcher needs to conduct a study to test the usability of the model.

RESEARCH METHODOLOGY

The purpose of this study, which is model usability evaluation, is to evaluate the model that has been developed (Aisha Chang & Azli Ariffin, 2023). This study is to obtain the usability of an Activity Model through Chinese Children's Song to Enhance Culture Appreciation by using the Fuzzy Delphi technique. The evaluation of this model is done by experts selected based on several criteria. The study uses the Fuzzy Delphi method to obtain expert views in validating the developed activity model.

Based on the context of educational research, the Fuzzy Delphi Technique is a newly introduced technique in Malaysia (Syar Meeze, 2015; Norlidah Alias et al., 2014; Saiman et al., 2017), Fuzzy Delphi Method was introduced by Kaufmann and Gupta in 1988 and this method is a combination of fuzzy set theory and the Delphi Method introduced by Murray, Pipino and Gigch in 1985 (Mohd. Paris Saleh & Saedah Siraj, 2017).

The justification for choosing the Fuzzy Delphi Method for this study is because the researcher believes that this technique is the best to get expert agreement in determining the elements that will be included in usability evaluating. Saedah Siraj et al. (2020) listed several advantages of using Fuzzy Delphi namely:

1. Save time to produce instruments (questionnaires).
2. Save costs.
3. Reduce the number of surveys (interviews) and improve the production of instruments (questionnaires).
4. Experts will quickly issue opinions, as well as be able to ensure completeness and consistency in expressing opinions.
5. Ambiguity in doing research can be avoided. Therefore, this technique should not be misused because the original opinion from the expert will have an impact in the study.

Expert evaluation based on expert responses to a questionnaire consisting of a 5-point scale (strongly disagree, disagree, moderately agree, agree, strongly agree) is able to show a more accurate analysis (Mohd Paris & Saedah Siraj, 2017). In this study, the researcher chose to use a 5-point Likert linguistic scale as shown in Table 1.

Table 1: Linguistic Variables and Fuzzy Scales

Linguistic Variables	Fuzzy Scale
Strongly Disagree	(0.0, 0.1, 0.2)
Disagree	(0.1, 0.2, 0.4)
Moderately Agree	(0.2, 0.4, 0.6)
Agree	(0.4, 0.6, 0.8)
Strongly Agree	(0.6, 0.8, 1.0)

Sample

This study uses purposive sampling to select primary school music teachers who exclusively teach music. According to Witkin and Altschuld (1995), the Delphi method typically involves 10 to 50 experts, while Adler & Ziglio (1996) recommend 10 to 15 experts (Mohd Paris & Saedah Siraj, 2017). Ocampo et al., (2018) argue that the number of experts doesn't need to be large since the quality of results isn't strongly linked to the number of participants. Therefore, 50 music teachers with over five years of experience were selected as experts for this study.

The number of experts was chosen based on the study's needs, as these teachers will use the final activity model. The selection criteria for experts, as outlined by Pill (1971) and Oh (1974), require them to have relevant experience, and be able to provide insights and evaluations for consensus discussions (Azli Ariffin, 2018).

Selecting 50 experts ensures high validity in evaluating the model. The criteria for choosing these experts are based on previous studies by Mohd Ridhuan Mohd Jamil and Nurulrabihah Mat Noh (2020).

Instruments

Measuring tools, such as research instruments, are crucial for achieving research objectives and ensuring the desired data and information are obtained (Mohd Majid Konting, 2004). Selecting the right instrument is very important (Aisha Chang & Azli Ariffin, 2023). According to Azizi et al. (2020), research instruments are tools used for the data collection process. The researcher uses a questionnaire to gather information based on the research question. A questionnaire is a written, structured interview where respondents provide simple answers or choose from given options (Ting et al., 2022).

Ting et al. (2022) also state that questionnaires are organized systematically and suitable for collecting information on perceptions, opinions, and experiences. Using questionnaires can improve the accuracy and truthfulness of responses. This method is recommended by Saedah Siraj and Muhamad Rozkee (2020) for analyzing needs in developing activity models. Researchers like Azli Ariffin (2018), Mohd Ridhuan Mohd Jamil (2016), and Mohd Paris Saleh and Saedah Siraj (2017) have also used questionnaires in their study.

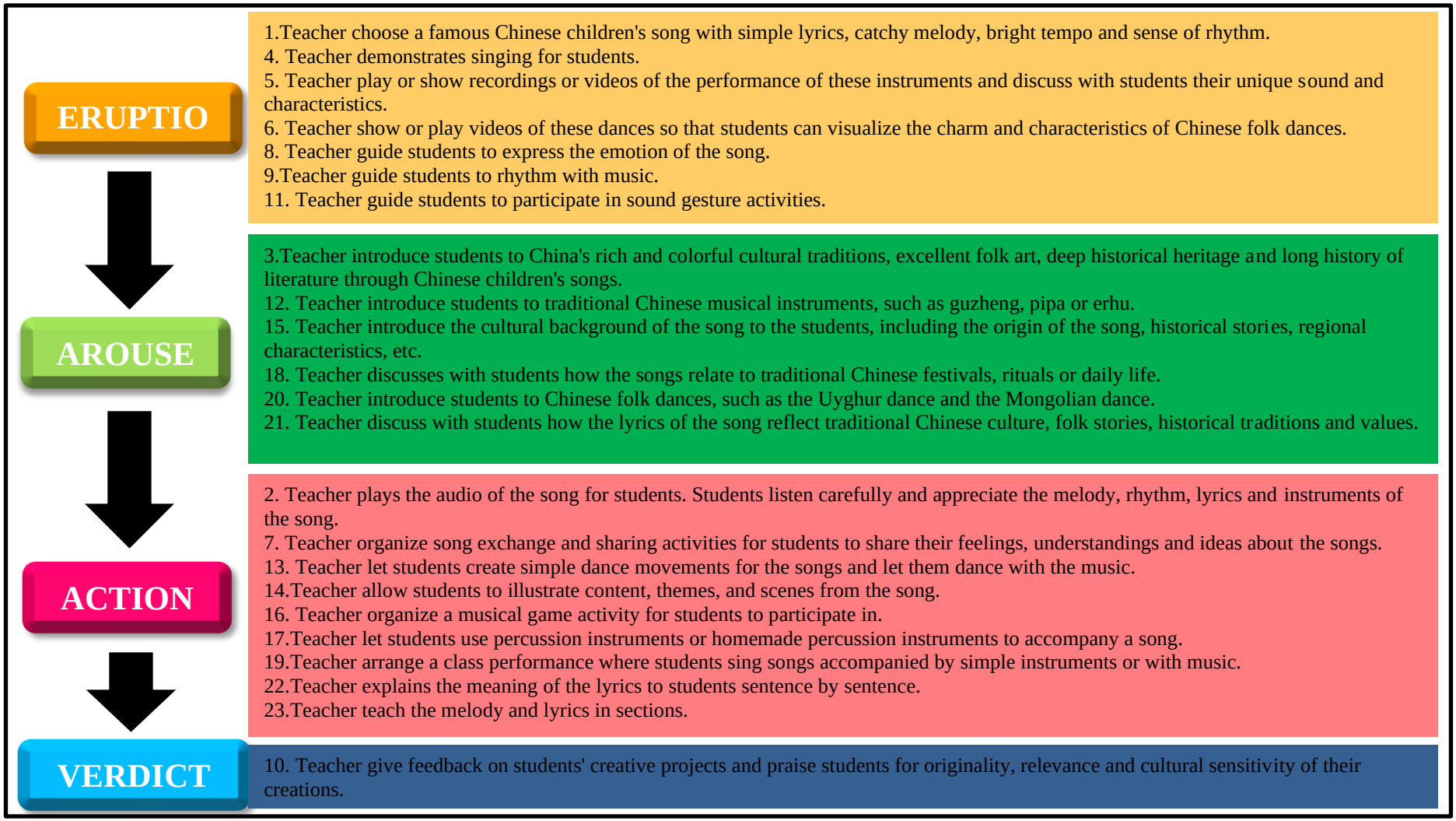
In this evaluation usability research, a questionnaire with five likert scale was used as a research instrument. There are six (6) sections in the questionnaire in this phase, namely:

1. Demographic
2. Usability of elements
3. Usability of classification element
4. Usability of the list of elements
5. Usability of relationships between elements
6. Usability assessment of model

FINDINGS

Evaluation of model usability is made based on the model in figure 1.

Figure 1: Activity Model through Chinese Children's Song to Enhance Culture Appreciation (Modified)



The findings of this study are presented the demographic data of the experts who participated as respondents in this phase and the usability data of the model received from these respondents. A total of 50 respondents took part in the evaluation phase of the Activity Model through Chinese Children's Song to Enhance Culture Appreciation. These respondents were randomly selected music teachers, though selection criteria were in place to ensure their status as experts. The expert demographic report includes four questions: age, gender, education background, title and teaching experiences.

Table 2: Age of Respondents

AGE	FREQUENCY (N)
21 – 35 years old	21 (42.0%)
36 – 50 years old	25 (50.0%)
51 – 60 years old	4 (8.0%)

According to Table 2, the largest group of participating teachers falls within the age range of 36 to 50 years old, accounting for 50.0% of the sample (25 respondents). The next largest group consists of teachers aged 21 to 35 years old, comprising 42.0% (21 respondents). Additionally, 8.0% of respondents (4 individuals) are between the ages of 51 and 60 years old.

Table 3: Gender of Respondents

GENDER	FREQUENCY (N)
Male	6 (12.0%)
Female	44 (88.0%)

Table 3 presents the gender distribution of the respondents. Females constitute the majority, with 44 individuals, making up 88.0% of the sample. Males account for the remaining 6 respondents, representing 12.0% of the total sample. This distribution highlights a higher participation rate among females compared to males in the study.

Table 4: Educational Background of Respondents

EDUCATION	FREQUENCY (N)
Polytechnic School	1 (2.0%)
Junior College	5 (10.0%)
Bachelor's Degree's	42 (84.0%)
Master's Degree	2 (4.0%)
Doctor's Degree	-

According to Table 4, the majority of randomly selected respondents hold a bachelor's degree, comprising 42 individuals or 84.0% of the sample. Ten percent of respondents, totaling 5 individuals, have a junior college educational background. Two respondents (4.0%) possess a master's degree. Additionally, one respondent (2.0%) holds qualifications from a polytechnic school. There were no respondents with a doctorate degree in this sample.

Table 5: Title of Respondents

EDUCATION	FREQUENCY (N)
No Title	3 (6.0%)
Junior	18 (36.0%)
Intermediate	23 (46.0%)
Senior	6 (12.0%)

According to Table 5, the majority of respondents hold an intermediate title, representing 46.0% (23 respondents). The junior title is held by 18 respondents, accounting for 36.0%. Six respondents (12.0%) hold the senior title. Additionally, three respondents (6.0%) do not hold any formal title.

Table 6: Respondent's Length of Services

SERVICES	FREQUENCY (N)
1 – 5 years	5 (10.0%)
6 – 10 years	11 (22.0%)
11 – 20 years	19 (38.0%)
More than 20 years	15 (30.0%)

According to 6, the largest group of respondents, comprising 19 individuals or 38.0%, have served for 11 to 20 years. Following this, 15 respondents (30.0%) have served for more than 20 years. Eleven respondents (22.0%) have a service tenure of 6 to 10 years, while five respondents (10.0%) have served for 1 to 5 years.

In this study, the Fuzzy Delphi method was utilized to evaluate consensus among experts regarding the model's usability. Data from all 50 respondents underwent analysis using the methodology outlined in Chapter 3. The threshold value (d) was assessed to determine agreement on each item: a d value below 0.2 indicates consensus among experts, while a value above 0.2 suggests disagreement (Azli, 2017; Cheng & Lin, 2002).

According to Chu and Hwang (2008) and Murry and Hammons (1995) cited in Azli (2017), expert group agreement must exceed 75.0% to establish consensus. If this threshold is not met, the assessment is repeated until consensus is achieved. Once the percentage of agreement surpasses 75.0%, the defuzzification value (ai) is calculated.

The defuzzification value (ai) identifies items agreed upon during the evaluation of the implemented model. According to Azli (2017), Muhammad Ridhuan Tony Lim (2014), and Nurulrabihah (2014), accepted ai values range from 33.6 to 46.8, with a minimum of 24 for expert agreement across all items and a maximum of 46.8.

The usability of the Activity Model through Chinese Children's Song to Enhance Culture Appreciation was evaluated across five factors derived from the administered questionnaire:

1. Usability of elements
2. Usability of classification element
3. Usability of the list of elements
4. Usability of relationships between elements
5. Usability assessment of model

Each factor consists of five statement items, reflecting expert consensus on the framework's usability. The findings presented aim to address the evaluation question outlined:
What is the usability of an Activity Model through Chinese Children's Song to Enhance Culture Appreciation based on expert opinion?

The data analysis report on the model's applicability is detailed for each factor, including the threshold value (d), percentage agreement, and defuzzification value (ai).

Table 7 displays the threshold value (d) for all items across each construct outlined in the Phase 3 questionnaire. There are 5 constructs tested for usability in this phase, namely element usability, element classification usability, element list usability, element relationship usability and overall model usability. For the element usability construct, all 50 respondents gave a threshold value (d) below the acceptance value of 0.2. The same goes for the other four constructs. No construct recorded a threshold value (d) exceeding the acceptance value of 0.2. It can be concluded that no item in each construct has a threshold value (d) above 0.2 from any respondent. This demonstrates a high level of consensus among experts, as a d value below 0.2 signifies substantial agreement with the evaluated items or statements. When the d value is low, such as less than 0.2, experts' responses are closely aligned, indicating minimal dispersion or disagreement among their opinions.

Practically, a d value below 0.2 suggests that the majority of experts share similar views on the evaluated items. This consensus is crucial for guiding decision-making processes where unified expert opinions are essential. In the context of the Fuzzy Delphi method, a threshold value not exceeding 0.2 serves as a reliable indicator of consensus among experts, supporting informed decision-making by highlighting collective agreement.

Table 7: Threshold Value (d) for Usability Evaluation

	ELEMENTS					CLASSIFICATION OF ELEMENTS					LIST OF ELEMENTS					RELATIONSHIPS BETWEEN ELEMENTS					MODEL				
	B1	**B2**	**B3**	**B4**	**B5**	**C1**	**C2**	**C3**	**C4**	**C5**	**D1**	**D2**	**D3**	**D4**	**D5**	**E1**	**E2**	**E3**	**E4**	**E5**	**F1**	**F2**	**F3**	**F4**	**F5**
R1	0.0256	0.0196	0.0278	0.0215	0.0215	0.0256	0.0196	0.0278	0.0225	0.0215	0.0246	0.0215	0.0246	0.0225	0.0225	0.0278	0.0225	0.0246	0.0246	0.0246	0.0225	0.0196	0.0289	0.0256	0.0246
R2	0.0256	0.0196	0.0278	0.0215	0.0215	0.0256	0.0196	0.0278	0.0225	0.0215	0.0246	0.0215	0.0246	0.0225	0.0225	0.0278	0.0225	0.0246	0.0246	0.0246	0.0225	0.0196	0.0289	0.0256	0.0246
R3	0.0256	0.0196	0.0011	0.0215	0.0215	0.0256	0.0196	0.0011	0.0225	0.0215	0.0246	0.0215	0.0019	0.0225	0.0225	0.0011	0.0225	0.0019	0.0246	0.0246	0.0225	0.0196	0.0009	0.0256	0.0246
R4	0.0576	0.0676	0.0545	0.0642	0.0642	0.0576	0.0676	0.0545	0.0625	0.0642	0.0592	0.0642	0.0592	0.0625	0.0625	0.0545	0.0625	0.0592	0.0592	0.0592	0.0625	0.0676	0.0529	0.0576	0.0592
R5	0.0016	0.0036	0.0011	0.0029	0.0029	0.0016	0.0036	0.0011	0.0025	0.0029	0.0019	0.0029	0.0019	0.0025	0.0025	0.0011	0.0025	0.0019	0.0019	0.0019	0.0025	0.0036	0.0009	0.0016	0.0019
R6	0.0256	0.0196	0.0278	0.0215	0.0215	0.0256	0.0196	0.0278	0.0225	0.0215	0.0246	0.0215	0.0246	0.0225	0.0225	0.0278	0.0225	0.0246	0.0246	0.0246	0.0225	0.0196	0.0289	0.0256	0.0246
R7	0.0016	0.0036	0.0011	0.0029	0.0029	0.0016	0.0036	0.0011	0.0025	0.0029	0.0019	0.0029	0.0019	0.0025	0.0025	0.0011	0.0025	0.0019	0.0019	0.0019	0.0025	0.0036	0.0009	0.0016	0.0019
R8	0.0016	0.0196	0.0011	0.0029	0.0029	0.0016	0.0196	0.0011	0.0025	0.0029	0.0019	0.0029	0.0019	0.0025	0.0025	0.0011	0.0025	0.0019	0.0019	0.0019	0.0025	0.0196	0.0009	0.0016	0.0246
R9	0.0256	0.0196	0.0278	0.0215	0.0215	0.0256	0.0196	0.0278	0.0225	0.0215	0.0246	0.0215	0.0246	0.0225	0.0225	0.0278	0.0225	0.0246	0.0246	0.0246	0.0225	0.0196	0.0289	0.0256	0.0246
R10	0.0256	0.0196	0.0278	0.0215	0.0215	0.0256	0.0196	0.0278	0.0225	0.0215	0.0246	0.0215	0.0246	0.0225	0.0225	0.0278	0.0225	0.0246	0.0246	0.0246	0.0225	0.0196	0.0289	0.0256	0.0246
R11	0.0256	0.0196	0.0278	0.0215	0.0215	0.0256	0.0196	0.0278	0.0225	0.0215	0.0246	0.0215	0.0246	0.0225	0.0225	0.0278	0.0225	0.0246	0.0246	0.0246	0.0225	0.0196	0.0289	0.0256	0.0246
R12	0.0016	0.0036	0.0011	0.0029	0.0029	0.0016	0.0036	0.0011	0.0025	0.0029	0.0019	0.0029	0.0019	0.0025	0.0025	0.0011	0.0025	0.0019	0.0019	0.0019	0.0025	0.0036	0.0009	0.0016	0.0019
R13	0.0576	0.0676	0.0545	0.0029	0.0029	0.0576	0.0676	0.0545	0.0625	0.0642	0.0592	0.0642	0.0592	0.0625	0.0625	0.0545	0.0625	0.0592	0.0592	0.0592	0.0625	0.0676	0.0529	0.0576	0.0592
R14	0.0016	0.0036	0.0011	0.0029	0.0029	0.0016	0.0036	0.0011	0.0025	0.0029	0.0019	0.0029	0.0019	0.0025	0.0025	0.0011	0.0025	0.0019	0.0019	0.0019	0.0025	0.0036	0.0009	0.0016	0.0019
R15	0.0256	0.0196	0.0278	0.0215	0.0215	0.0256	0.0196	0.0278	0.0225	0.0215	0.0246	0.0215	0.0246	0.0225	0.0225	0.0278	0.0225	0.0246	0.0246	0.0246	0.0225	0.0196	0.0289	0.0256	0.0246
R16	0.0256	0.0196	0.0011	0.0215	0.0029	0.0016	0.0196	0.0011	0.0225	0.0215	0.0019	0.0215	0.0019	0.0225	0.0225	0.1618	0.0625	0.0019	0.0592	0.0592	0.0225	0.0196	0.0009	0.0256	0.0246
R17	0.0576	0.0676	0.0545	0.0642	0.0642	0.0576	0.0676	0.0545	0.0625	0.0642	0.0592	0.0642	0.0592	0.0625	0.0625	0.0545	0.0625	0.0592	0.0592	0.0592	0.0625	0.0676	0.1596	0.1676	0.0592
R18	0.0256	0.0196	0.0278	0.0215	0.0215	0.0256	0.0196	0.0278	0.0225	0.0215	0.0246	0.0215	0.0246	0.0225	0.0225	0.0278	0.0225	0.0246	0.0246	0.0246	0.0225	0.0196	0.0289	0.0256	0.0246
R19	0.0256	0.0196	0.0278	0.0215	0.0215	0.0256	0.0196	0.0278	0.0225	0.0215	0.0246	0.0215	0.0246	0.0225	0.0225	0.0278	0.0225	0.0246	0.0246	0.0246	0.0225	0.0196	0.0289	0.0256	0.0246
R20	0.0256	0.0196	0.0278	0.0215	0.0215	0.0256	0.0196	0.0278	0.0225	0.0215	0.0246	0.0215	0.0246	0.0225	0.0225	0.0278	0.0225	0.0246	0.0246	0.0246	0.0225	0.0196	0.0289	0.0256	0.0246
R21	0.1676	0.1843	0.1618	0.1782	0.1782	0.1676	0.1842	0.1618	0.1758	0.1782	0.1699	0.1782	0.1699	0.1758	0.1758	0.1618	0.1758	0.1699	0.1699	0.1699	0.1758	0.1843	0.1596	0.1676	0.1699
R22	0.0256	0.0196	0.0278	0.0215	0.0215	0.0256	0.0196	0.0278	0.0225	0.0215	0.0246	0.0215	0.0246	0.0225	0.0225	0.0278	0.0225	0.0246	0.0246	0.0246	0.0225	0.0196	0.0289	0.0256	0.0246
R23	0.0576	0.0036	0.0545	0.0029	0.0029	0.0576	0.0036	0.0011	0.0025	0.0029	0.0019	0.0029	0.0019	0.0025	0.0025	0.0011	0.0025	0.0019	0.0019	0.0019	0.0025	0.0036	0.0009	0.0016	0.0019

continued

R24	0.0576	0.0036	0.0011	0.0642	0.0642	0.0576	0.0036	0.0011	0.0025	0.0029	0.0019	0.0029	0.0019	0.0025	0.0025	0.0011	0.0025	0.0019	0.0019	0.0019	0.0025	0.0036	0.0009	0.0016	0.0019
R25	0.0016	0.0036	0.0011	0.0029	0.0029	0.0016	0.0036	0.0011	0.0625	0.0029	0.0592	0.0029	0.0019	0.0025	0.0025	0.0545	0.0025	0.0019	0.0019	0.0019	0.0625	0.0036	0.0529	0.0576	0.0592
R26	0.0256	0.0196	0.0278	0.0215	0.0215	0.0256	0.0196	0.0278	0.0225	0.0215	0.0246	0.0215	0.0246	0.0225	0.0225	0.0278	0.0225	0.0246	0.0246	0.0246	0.0225	0.0196	0.0289	0.0256	0.0246
R27	0.0016	0.0036	0.0011	0.0029	0.0029	0.0016	0.0036	0.0011	0.0025	0.0029	0.0019	0.0029	0.0019	0.0025	0.0025	0.0011	0.0025	0.0019	0.0019	0.0019	0.0025	0.0036	0.0009	0.0016	0.0019
R28	0.0016	0.0036	0.0011	0.0029	0.0029	0.0016	0.0036	0.0011	0.0025	0.0029	0.0019	0.0029	0.0019	0.0025	0.0025	0.0011	0.0025	0.0019	0.0019	0.0019	0.0025	0.0036	0.0009	0.0016	0.0019
R29	0.0256	0.0196	0.0278	0.0215	0.0215	0.0256	0.0196	0.0278	0.0225	0.0215	0.0246	0.0215	0.0246	0.0225	0.0225	0.0278	0.0225	0.0246	0.0246	0.0246	0.0225	0.0196	0.0289	0.0256	0.0246
R30	0.1676	0.0676	0.1618	0.0642	0.0642	0.1676	0.0676	0.1618	0.0625	0.0642	0.1699	0.0642	0.1699	0.0625	0.0625	0.1618	0.0625	0.1699	0.0592	0.0592	0.0625	0.0036	0.0529	0.0576	0.0592
R31	0.0576	0.0676	0.0545	0.0642	0.0642	0.0576	0.0676	0.0545	0.0625	0.0642	0.0592	0.0642	0.0592	0.0625	0.0625	0.0545	0.0625	0.0592	0.0592	0.0592	0.0625	0.0676	0.0529	0.0576	0.0592
R32	0.0256	0.0196	0.0278	0.0215	0.0215	0.0256	0.0196	0.0278	0.0225	0.0215	0.0246	0.0215	0.0246	0.0225	0.0225	0.0278	0.0225	0.0246	0.0246	0.0246	0.0225	0.0196	0.0289	0.0256	0.0246
R33	0.0016	0.0676	0.0011	0.0029	0.0029	0.0016	0.0676	0.0545	0.0025	0.0642	0.0019	0.0029	0.0019	0.0625	0.0625	0.0011	0.0025	0.0019	0.0019	0.0019	0.0025	0.0676	0.0529	0.0576	0.0592
R34	0.0256	0.0196	0.0278	0.0215	0.0215	0.0256	0.0196	0.0278	0.0225	0.0215	0.0246	0.0215	0.0246	0.0225	0.0225	0.0278	0.0225	0.0246	0.0246	0.0246	0.0225	0.0196	0.0289	0.0256	0.0246
R35	0.0256	0.0196	0.0278	0.0215	0.0215	0.0256	0.0196	0.0278	0.0225	0.0215	0.0246	0.0215	0.0246	0.0225	0.0225	0.0278	0.0225	0.0246	0.0246	0.0246	0.0225	0.0196	0.0289	0.0256	0.0246
R36	0.0256	0.0196	0.0278	0.0215	0.0215	0.0256	0.0196	0.0278	0.0225	0.0215	0.0246	0.0215	0.0246	0.0225	0.0225	0.0278	0.0225	0.0246	0.0246	0.0246	0.0225	0.0196	0.0289	0.0256	0.0246
R37	0.0256	0.0196	0.0278	0.0215	0.0215	0.0256	0.0196	0.0278	0.0225	0.0215	0.0246	0.0215	0.0246	0.0225	0.0225	0.0278	0.0225	0.0246	0.0246	0.0246	0.0225	0.0196	0.0289	0.0256	0.0246
R38	0.0016	0.0036	0.0011	0.0029	0.0029	0.0016	0.0036	0.0011	0.0025	0.0029	0.0019	0.0029	0.0019	0.0025	0.0025	0.0011	0.0025	0.0019	0.0019	0.0019	0.0025	0.0036	0.0009	0.0016	0.0019
R39	0.1676	0.1843	0.1618	0.1782	0.1782	0.1676	0.1842	0.1618	0.1758	0.1782	0.1699	0.1782	0.1699	0.1758	0.1758	0.1618	0.1758	0.1699	0.1699	0.1699	0.1758	0.1843	0.1596	0.1676	0.1699
R40	0.0016	0.0196	0.0011	0.0029	0.0029	0.0016	0.0196	0.0011	0.0025	0.0029	0.0019	0.0029	0.0019	0.0025	0.0025	0.0011	0.0025	0.0019	0.0019	0.0019	0.0025	0.0196	0.0009	0.0016	0.0019
R41	0.0256	0.0196	0.0278	0.0215	0.0215	0.0256	0.0196	0.0278	0.0225	0.0215	0.0246	0.0215	0.0246	0.0225	0.0225	0.0278	0.0225	0.0246	0.0246	0.0246	0.0225	0.0196	0.0289	0.0256	0.0246
R42	0.0256	0.0196	0.0278	0.0215	0.0215	0.0256	0.0196	0.0278	0.0225	0.0215	0.0246	0.0215	0.0246	0.0225	0.0225	0.0278	0.0225	0.0246	0.0246	0.0246	0.0225	0.0196	0.0289	0.0256	0.0246
R43	0.0256	0.0196	0.0278	0.0215	0.0215	0.0256	0.0196	0.0278	0.0225	0.0215	0.0246	0.0215	0.0246	0.0225	0.0225	0.0278	0.0225	0.0246	0.0246	0.0246	0.0225	0.0196	0.0289	0.0256	0.0246
R44	0.0576	0.0036	0.0545	0.0642	0.0029	0.0576	0.0676	0.0545	0.0625	0.0642	0.0592	0.0642	0.0592	0.0625	0.0625	0.0545	0.0625	0.0592	0.0592	0.0592	0.0625	0.0676	0.0529	0.0576	0.0592
R45	0.0016	0.0676	0.0545	0.0642	0.0029	0.0016	0.0676	0.0545	0.0625	0.0029	0.0019	0.0642	0.0592	0.0625	0.0625	0.0011	0.0625	0.0592	0.0592	0.0592	0.0025	0.0676	0.0529	0.0576	0.0592
R46	0.0256	0.0196	0.0278	0.0215	0.0215	0.0256	0.0196	0.0278	0.0225	0.0215	0.0246	0.0215	0.0246	0.0225	0.0225	0.0278	0.0225	0.0246	0.0246	0.0246	0.0225	0.0196	0.0289	0.0256	0.0246
R47	0.1676	0.0676	0.0545	0.0029	0.0642	0.0576	0.0676	0.0545	0.0625	0.0642	0.0592	0.0642	0.0592	0.0625	0.0625	0.0545	0.0625	0.0592	0.0592	0.0592	0.1758	0.0676	0.0529	0.0576	0.0592
R48	0.0016	0.0036	0.0011	0.0029	0.0029	0.0016	0.0036	0.0011	0.0025	0.0029	0.0019	0.0029	0.0019	0.0025	0.0025	0.0011	0.0025	0.0019	0.0019	0.0019	0.0025	0.0036	0.0009	0.0016	0.0019
R49	0.0256	0.0196	0.0278	0.0215	0.0215	0.0256	0.0196	0.0278	0.0225	0.0215	0.0246	0.0215	0.0246	0.0225	0.0225	0.0278	0.0225	0.0246	0.0246	0.0246	0.0225	0.0196	0.0289	0.0256	0.0246
R50	0.0576	0.0036	0.0545	0.0642	0.0642	0.0576	0.0036	0.0545	0.0025	0.0029	0.0592	0.0029	0.0019	0.0025	0.0025	0.0545	0.0025	0.0019	0.0019	0.0019	0.0025	0.0036	0.0529	0.0576	0.0592

Table 8: Expert's Agreement Percentage for Usability Evaluation

SABILITY EVALUATION	USABILITY OF ELEMENTS	USABILITY OF CLASSIFICATION ELEMENT	USABILITY LIST OF ELEMENTS	USABILITY RELATIONSHIP BETWEEN ELEMENTS	USABILITY OF MODEL
Users can easily master	100.0%	100.0%	100.0%	100.0%	100.0%
Meet users' expectations for high learning efficiency.	100.0%	100.0%	100.0%	100.0%	100.0%
Users remain proficient in implementing after a period of time without having to relearn them.	100.0%	100.0%	100.0%	100.0%	100.0%
Users are not prone to make many mistakes while implementing, and if mistakes are made, users can handle them easily.	100.0%	100.0%	100.0%	100.0%	100.0%
Users can get satisfaction and enjoyment while performing	100.0%	100.0%	100.0%	100.0%	100.0%

Table 9: Defuzzification Value for Usability Evaluation

USABILITY EVALUATION	DEFUZZIFICATION VALUE (ai)				
	USABILITY OF ELEMENTS	USABILITY OF CLASSIFICATION ELEMENT	USABILITY LIST OF ELEMENTS	USABILITY RELATIONSHIP BETWEEN ELEMENTS	USABILITY OF MODEL
Users can easily master	31.95	31.88	32.08	31.50	32.48
Meet users' expectations for high learning efficiency.	33.05	32.85	32.65	32.25	33.05
Users remain proficient in implementing after a period of time without having to relearn them.	31.68	31.68	32.08	32.08	31.48
Users are not prone to make many mistakes while implementing, and if mistakes are made, users can handle them easily.	32.65	32.45	32.45	32.25	31.88
Users can get satisfaction and enjoyment while performing	32.65	32.65	32.45	32.25	32.25

In the Fuzzy Delphi method, experts' consensus percentage denotes the level of agreement reached among a group of experts regarding specific items or statements under evaluation. It represents the proportion of experts who agree on a particular item or statement, expressed as a percentage to quantify the degree of agreement. Higher consensus percentages indicate stronger agreement among experts, which enhances the reliability and validity of conclusions drawn from the Fuzzy Delphi process. These percentages are pivotal in decision-making processes, helping to determine whether there is adequate agreement among experts to proceed with proposed items or decisions, or if further discussion and refinement are necessary.

In many studies employing the Fuzzy Delphi method, a consensus threshold is often set at 75% agreement. This threshold determines when an item or statement is accepted or rejected based on expert consensus, ensuring rigorous evaluation and decision-making based on collective expert opinion. Based on the report shown in table 8, there are 5 evaluation constructs where each construct contains 5 items. The first construct, which is the element usability construct, shows that all five items that were questioned get a full percentage from the respondents based on the threshold value (d) that has been obtained as shown in table 8. The second construct which is the element classification usability construct also got the same percentage value. Likewise for the other three constructs which are the element list usability construct, the relationship between element usability construct and the model usability construct as a whole which gives the same percentage value which is 100.0%. The displayed data clearly shows that all items for all constructs give a percentage value of 100%. This shows that the experts agree that they evaluate and accept the model that has been built for implementation.

In the context of the Fuzzy Delphi Method (FDM), defuzzification refers to the process of converting fuzzy sets or fuzzy numbers into crisp values that can be used for decision-making or analysis. Once the aggregated fuzzy set is obtained, defuzzification is applied to obtain a single crisp value or a narrow range of values that represents the best estimate based on the fuzzy inputs. In the Fuzzy Delphi Method, defuzzification is crucial because it transforms the fuzzy judgments provided by experts into numerical values or ranges that can be used for further analysis or decision-making. This helps in quantifying the qualitative inputs from experts and deriving actionable results.

The data reported in table 9 covers the defuzzification value for each item of each construct. There were five construct that have been evaluated namely element usability, element classification usability, element list usability, element relationship usability and overall model usability. Based on the data for each construct, the displayed defuzzification values are all in the range of 24 to 33.6. This range is categorized as experts consensually slightly agree. Slightly agree in the Fuzzy Delphi method signifies a level of agreement among experts that shows a trend towards consensus, though with some reservations or variability in opinion. The exact range may vary, but it generally denotes a moderate degree of alignment among expert viewpoints. This shows that the experts agree with the model that has been built even with the slightly agree.

In summary, the percentage values and defuzzification results obtained from all usability evaluations covering element usability, classification of element usability, list of element usability, relationship between elements usability, and overall model usability. It were indicate that experts find the model easy to learn, efficient to use, easy to remember, minimally error-prone, and user-friendly. This confirms that the study's objective for the usability evaluation phase has been successfully achieved.

SUMMARY

The usability evaluation demonstrated the model's suitability based on five criteria: ease of learning, efficiency, ease of recall, error prevention, and user-friendliness based on the prototype model that have been developed before. These criteria were assessed across element usability, classification, list presentation, relationships, and overall model functionality.

REFERENCES

Adler, M., & Ziglio, E. (1996). *Gazing Into The Oracle: The Delphi Method And Its Application To Social Policy And Public Health*. Jessica Kingsley Publishers.

Alias, N., DeWitt, D., Rahman, M. N. A., Gelamdin, R. B., Rauf, R. A. A., & Siraj, S. (2014). Effectiveness of the Biology PTechLS Module in a Felda Science Centre. *Malaysian Online Journal of Educational Technology*, *2*(4), 32-36.

Ariffin, A. (2018). *Reka Bentuk Model Aktiviti Penggunaan Lagu Kanak- kanak Melayu Tradisional Untuk Peningkatan Imaginasi-Kreatif Prasekolah*. Universiti Malaya.

Azizi, S. M., Roozbahani, N., & Khatony, A. (2020). Factors affecting the acceptance of blended learning in medical education: application of UTAUT2 model. *BMC medical education*, *20*, 1-9.

Barry, R. (2017). *The digital critic: Literary culture online*. OR Books.

Campbell, M. R. (2015). A Very Brief History of Music Teacher Education: A Story of Reform. *The Mountain Lake Reader*, (6), 42.

Cattien, J., & Stopford, R. J. (2023). The appropriating subject: Cultural appreciation, property and entitlement. *Philosophy & Social Criticism*, *49*(9), 1061-1078.

Chang, A., & Ariffin, A. (2023). The Application of Fuzzy Delphi Technique in Evaluating the Appropriate Arrangement of the Teaching Activity Model Elements using I-Think Maps in the Development of Future Thinking Skills. *Journal of Contemporary Social Science and Education Studies (JOCSSES) E-ISSN-2785-8774*, *3*(1), 148-158.

Chen-Hafteck, L. (2007). Contextual analyses of children's responses to an integrated Chinese music and culture experience. *Music Education Research*, *9*(3), 337-353.

Davis, S. L. (2005). *Song and silence: Ethnic revival on China's southwest borders*. Columbia University Press.

Han, J., & Han, Y. (2019). Cultural concepts as powerful theoretical tools: Chinese teachers' perceptions of their relationship with students in a cross-cultural context. *International Journal for the Scholarship of Teaching and Learning*.

James, C. E., & Howard, P. S. (2020). Multiculturalism, multicultural education, and racialized students in Canada. *The education systems of the Americas*, 1-14.

Kaufmann, A. and Gupta, M.M. (1985) Introduction to Fuzzy Arithmetic: Theory and Applications, Van Nostrand Reinhold, New York.

Kezar, A., & Elrod, S. (2020). Taken for granted: Improving the culture of celebration, appreciation, and recognition in higher education. *Change: The Magazine of Higher Learning*, *52*(5), 29-36.

Limaye, S., Johnstone, C., & Kayama, M. (Eds.). (2024). *Disability as Diversity in India: Theory, Practice, and Lived Experience*. Taylor & Francis.

Matiisen, T., Oliver, A., Cohen, T., & Schulman, J. (2019). Teacher–student curriculum learning. *IEEE transactions on neural networks and learning systems*, *31*(9), 3732-3740.

Mohd Majid Konting (2004). *Kaedah Penyelidikan Pendidikan*. Kuala Lumpur: Dewan Bahasa Dan Pustaka.

Mohd Ridhuan Mohd Jamil, & Nurul Rabihah Mat Noh. (2020). Kepelbagaian Metodologi dalam Penyelidikan Reka Bentuk dan Pembangunan. Qaisar Prestige Resources.

Mohd Ridhuan, M. J. (2016). Pembangunan Model Kurikulum Latihan Skives Bagi Program Pengajian Kejuruteraan Pembelajaran Berasaskan Kerja. In *Thesis Ijazah Doktor Falsafah*. Unpublished doctoral dissertation, University Malaya, Kuala Lumpur

Morriseau, K., & Fowler, S. B. (2024). A Concept Analysis of Cultural Appreciation in Addressing the Wholistic Health Needs of Indigenous People. *Journal of Holistic Nursing*, *42*(2), 202-210.

Murray, J., Pipino, L., & Gigch, J. (1985). A Pilot Study Of Fuzzy Set Modification Of Dephi. In *Human System Management* (pp. 6–80).

Nethsinghe, R. (2012). Finding balance in a mix of culture: Appreciation of diversity through multicultural music education. *International Journal of Music Education*, *30*(4), 382-396.

Ocampo, L., Ebisa, J. A., Ombe, J., & Escoto, M. G. (2018). Sustainable ecotourism indicators with fuzzy Delphi method–A Philippine perspective. *Ecological indicators*, *93*, 874-888.

Offorma, G. C. (2016). Integrating Components of Culture in Curriculum Planning. *International Journal of Curriculum and Instruction*, *8*(1), 1-8.

Oh, K. H. (1974). *Forecasting through hierarchical Delphi*. Unpublished doctoral dissertation, The Ohio State University, Columbus.

Pill, J. (1971). The Delphi method: substance, context, a critique and an annotated bibliography. *Socio-Economic Plan*, *5*, 57-71.

Rashid, S. M. M., Alias, N., Jomhari, N. J., & Yusof, M. Y. Z. M. (2017). Reka Bentuk Isi Kandungan Kurikulum Bahasa Isyarat Malaysia (BIM) Untuk Perkara Asas Fardhu Ain (PAFA). *JuKu: Jurnal Kurikulum & Pengajaran Asia Pasifik*, *3*(3), 1-8.

Saleh, M. P., & Siraj, S. (2017). Analisis keperluan pembangunan model pengajaran M-Pembelajaran mata

pelajaran Sejarah sekolah menengah. *JuKu: Jurnal Kurikulum & Pengajaran Asia Pasifik*, *4*(4), 12-24.

Shawer, S. F. (2010). Classroom-level curriculum development: EFL teachers as curriculum-developers, curriculum-makers and curriculum-transmitters. *Teaching and teacher education, 26*(2), 173-184.

Siraj, S., Abdullah, M. R. T. L., & Muhamad Rozkee, R. (2020). Pendekatan penyelidikan reka bentuk dan pembangunan: Aplikasi kepada penyelidikan pendidikan. Tanjong Malim: Universiti Pendidikan Sultan Idris.

Siraj, S., Abdullah, M. R. T. L., & Muhamad Rozkee, R. (2020). Pendekatan penyelidikan reka bentuk dan pembangunan: Aplikasi kepada penyelidikan pendidikan. Tanjong Malim: Universiti Pendidikan Sultan Idris.

Tapp, N. (2002). In defence of the archaic: A reconsideration of the 1950s ethnic classification project in China. *Asian Ethnicity*, *3*(1), 63-84.

Witkin, B. R., & Altschuld, J. W. (1995). *Planning and conducting needs assessments: A practical guide*. Sage.

Yu-Ting, Y., Miao, Y., Yong-Wei, Y., Qiong, Y., & Ting, L. (2022). Exploring urban empty-nesters' using WeChat influencing factors and quality of life: a qualitative descriptive study. *Geriatric Nursing*, *48*, 183-189.