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Fuzzy Delphi Techniques: Creative Teaching Model Design for Polytechnic Islamic Education Lecturers

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Abstract

Looking at the changes in the country's education landscape, the aspect of creativity is the focus of the Malaysian Education Development Plan (PPPM) 2013-2025 which aims to produce a creative and innovative thinking workforce. This showed that education is the main pillar to nurture and enhance creativity among students, which is the main source of human capital in the country, especially in the institutions of higher learning. Therefore, Islamic Education lecturers in polytechnics should always be ahead by improving teaching to be more creative. This study was conducted to look at the elements needed in designing a creative teaching model based on active teaching practices, lecturer skills, and the application of moral values. The quantitative study used the Fuzzy Delphi Technique by administering a questionnaire to 14 experts to obtain data. The results of the study found that 39elements were accepted by the experts with a threshold value (d) ≤ 0.2, the percentage of expert agreement exceeded 75%, and the value of α-cut ≥ 0.5.

Keywords: Creative-teaching, Fuzzy Delphi, Islamic Education, Polytechnic Lecturer.

Introduction

The development of 21st-century education in the education ecosystem in Malaysia created various spaces and opportunities for lecturers to strengthen teaching and provide diverse forms of knowledge delivery. Polytechnic is one of the Public Institutions of Higher Learning (IPTA) in Malaysia that offers technical education to produce a knowledgeable and skilled workforce in various fields to meet the needs of the industry today. The field of technical education is also thriving in line with the progress of the country's industrial sector. The transformation is based on the empowerment of polytechnics, the development of programs in specific thrust areas, teachers and staff who are knowledgeable, highly skilled, and have an excellent image and culture (Jabatan Pengajian Politeknik, 2009). The transformation also requires the lecturers to change the teaching approach. The teaching process in higher education refers to any form of activity or assignment that takes place between lecturers and students. This process requires the lecturer to be focused and clear on the whole process, taking into account the strategies, methods, techniques, and approaches used. Next, the lecturer needs to be knowledgeable and skilled to become more competent

and make the teaching more effective. The curriculum delivery process in the polytechnic provides various strategies for lecturers to convey knowledge by using a systematic and effective approach to meet the set standards to ensure quality delivery (Malaysian Polytechnic Standard, 2015).

Accordingly, these changes demand an element of creativity to be applied in the teaching and learning process. Creativity and innovation are one of the main core values in the Strategic Plan of the Department of Polytechnic Education and Community Colleges 2018-2025. The teaching implemented by the lecturers needs to be more creative to produce creative and excellent students with greater potential. Creativity in the teaching process is a new approach to create an interesting teaching and learning environment and able to produce excellent and creative students (Starko, 2010). Various elements lead to creative teaching, whether from the aspect of the curriculum, teaching methods, or teaching aids used by educators.

Literature Review

Islamic Education Lecturers in polytechnics are assigned to teach General Studies Courses or known as General Studies Subjects (MPU), which are offered to students from various fields. The General Studies courses are conducted by the Department of General Studies in a polytechnic. The implementation of General Studies Courses based on Islamic Education in the Polytechnic can develop a balanced human capital (Othman & Mustaffa, 2014). This course also complements the core courses and emphasizes the balance of knowledge and skills. The university's general courses provide the latest general knowledge and skills relevant to the formation of balanced and harmonious students in terms of cognitive, attitude, physical and spiritual (Samian, 2015). Din, Jodi & Hussain (2018) in their study argue that the division of General Studies Subjects is in line with the Malaysian Education Development Plan 2015-2025 (Ministry of Higher Education, 2016). The course has also been well planned by the Department of Higher Education by combining 21st-century skills in MPU courses with the hope of producing graduates who are knowledgeable and ethical and equipped with good thinking, behavior, and ethics (High Impact Educational Practices in General Studies, 2019).

This proves that the General Studies Courses are important in producing technical education graduates who can face global challenges and instill attitudes, skills, and values in the lives of students as the main agent of national development in the future. Therefore, Islamic Education lecturers need to improve their teaching in a more creative direction to ensure that the content of these courses is delivered and appreciated by the students. However, there are still the issues of lecturers in the institutions of higher learning (IPT) in terms of teaching methods and strategies that affect students and show weaknesses in lecturers' teaching. Lu (2013) showed that the pedagogical competency of lecturers in the IPTs is still at a moderate level. The traditional approach practiced by the lecturers also causes students to attend lectures just to pass the examination (Haniffa et al., 2019). The study of Mailis et al (2020) in an IPT also found that the interaction, feedback, and motivational strategies of lecturers towards students are at a moderate level.

The conventional teaching method, namely the lectures, is widely implemented in educational institutions which can cause boredom and make learning unattractive. Thus, the demands of creative teaching methods are seen as relevant to overcome this problem. In today's educational context, a necessary change towards a more creative teaching process needs to be implemented (Buntat & Ahamad, 2011; Marzuki, 2005). Expressing a similar

polemic, Samsudin et al (2013) state that an effort should be made so that a more creative teaching atmosphere can be created in the teaching and learning process that takes place in the classroom. Efforts to facilitate the learning process through creative teaching strategies need to be enhanced with activities that can stimulate students' minds (Faizuddin et al., 2016). Creativity in teaching and learning can be linked to the development of materials and approaches that encourage students' interest and motivation. Therefore, the selection of good teaching techniques and activities ensures smooth learning and facilitates students to understand the content of the lessons delivered (Yasim et al., 2017 & Azani et al., 2012).

Educators need to be knowledgeable and be equipped with the teaching skills such as planning, management, delivery, guidance, and evaluation activities to communicate knowledge and skills to students effectively (Yusoff et al., 2021). Based on the literature review, the researcher saw that there is a lack of studies conducted regarding creative teaching in polytechnics. The researcher thought it is appropriate to produce the elements for a creative teaching model design that can help Islamic Education lecturers to teach creatively.

Research Design

The production of these elements is carried out through literature reading and the researcher will apply the Fuzzy Delphi (FDM) method approach, which is through the agreement of a group of experts to confirm, evaluate, reject and add each element in the model developed. The selection of experts is important and it should fit the study context. The Fuzzy Delphi Method (FDM) is a method and instrument of measurement that is rebranded based on the Delphi Technique. Adler and Ziglio (1996) state that the Delphi method is a structured process for collecting and filtering knowledge from a group of experts through a series of questionnaires alternating with controlled expert feedback. Concordantly, Powell (2003) asserts that the Delphi method is a flexible method of obtaining expert consensus. Similarly, Yousuf (2007) also considers it as a method of obtaining data in a structured manner based on expert consensus. Among the main reasons why researchers choose to use the Fuzzy Delphi (FDM) method is because it is following Jamil et al. (2019) on the strengths of the Fuzzy Delphi (FDM) method, namely: 1) Able to prevent data loss and leakage; 2) Expert opinion can be fully expressed and ensure perfection; 3) Provide an overview of the actual responses and opinion consistency; and 4) Avoid weariness of the researchers and expert groups because Delphi rounds can be reduced. Recently, the Fuzzy Delph method is widely used in the social sciences as a method of measurement based on expert agreement (Noh et al., 2013; Noh et al., 2014; Ramlie et al. 2014; Harun et al., 2016; Abdullah et al., 2018; Anthony et al., 2019; Eshak & Zain, 2020; Yusoff et al., 2021).

Based on the view of Adler & Ziglio (1996), the number of appropriate experts in the Delphi method is 10 to 15 if there is a high degree of uniformity among the selected experts. This study used a total of 14 experts selected through purposive sampling, consisting of lecturers from public universities and Institute of Teacher Education (IPG), administrators and senior lecturers from polytechnics, officials from the Ministry of Education Malaysia (MOE), and curriculum developers from the Department of Polytechnic Education and Community Colleges (JPPKK). All experts are involved in the field of Creative Teaching, Islamic Education, General Studies, and Moral Values Education. All experts involved also meet the criteria set by the researcher, namely 1) have an academic qualification of at least a Master's Degree or 2) have more than 5 years of experience. These expert selection criteria are in line with

Berliner (2004a; 2004b), who argued that an individual is considered skilled and knowledgeable in a field if he has more than 5 years of experience in that field. Swanson and Holton (2008) also view that a person is considered an expert when he or she has high knowledge and skills in a field. The selected experts also need to have a background or experience in the field related to the study conducted so that it can support their opinion on the study needs and be able to review their judgment to reach an agreement (Phil, 1971). Gambatese et al (2008) also stated experts must have high academic qualifications. According to Babbie (2002), the panel selection can also be made based on expert status among colleagues and professional experience. Therefore, the selection of expert panels is not too strict but must meet the set criteria (Marzuki et al., 2007). The implementation of the Fuzzy Delphi method involves several key processes that need to be implemented. In general, the Fuzzy Delphi method implemented in this study involved 4 main steps namely; 1) instruments preparation; 2) data collection; 3) data analysis; and 4) result evaluation (Jamil, 2016; Harun, 2016).

Data Collection

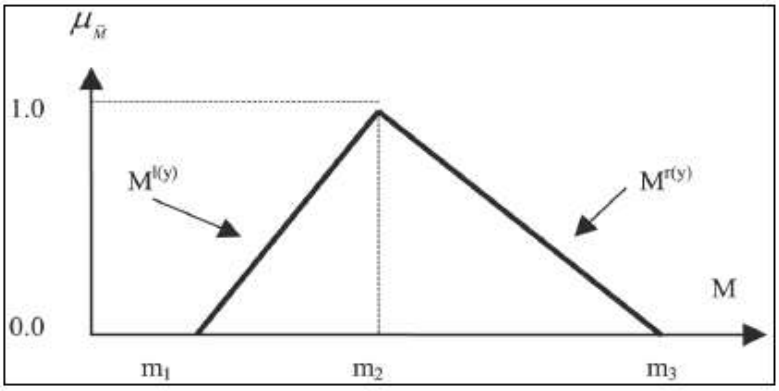
In this study, Fuzzy Delphi Questionnaire was used as an instrument to obtain data. In-depth research is carried out on the elements developed in the model that have been identified during the needs analysis process. Thus, these elements were developed based on the literature, then a Fuzzy Delphi (FDM) questionnaire was developed. The questionnaire covers the designed model elements as well as a description of the source for each element. The development of the questionnaire is very important to design and develop a creative teaching model for Polytechnic Islamic Education lecturers. This questionnaire used a 7-point Likert scale. This selection is in line with the views of Chang et al. (2011) that argued that a 7-point Likert scale is able to reduce the ambiguity gap (Fuzzy) for each value of expert acceptance and agreement. This argument is also in line with Jamil & Noh (2020), who interpreted the strength of the 7-point Likert scale to represent a value of ambiguity (Fuzzy) of 3.3% compared to the 5-point Likert scale which represents a higher value of ambiguity of 20%. Therefore, the researcher chose to use a 7-point Likert scale as follows:

Scale	Level of Agreement	Fuzzy Scale
1	Extremely Strongly Disagree	(0.0,0.0,0.1)
2	Strongly Disagree	(0.0,0.1,0.3)
3	Disagree	(0.1,0.3,0.5)
4	Moderately Agree	(0.3,0.5,0.7)
5	Agree	(0.5,0.7,0.9)
6	Strongly Agree	(0.7,0.9,1.0)
7	Extremely Strongly Agree	(0.9,1.0,1.0)

Data Analysis

The Fuzzy Delphi method involves two main processes, namely Triangular Fuzzy Numbers and Fuzzy Evaluation Processes. Therefore, in interpreting the data of the Fuzzy Delphi method, 3 conditions must be observed to validate the element whether it is accepted or rejected based on the expert agreement. Condition 1 and Condition 2 are tied to each other because these two conditions are in the Triangular Fuzzy Numbers section. Condition 3 is in the Fuzzy Evaluation Process section. The FDM analysis method involved the use of fuzzy set theory which had been integrated with the classical Delphi method where the Likert scale chosen by the expert was converted to a fuzzy scale using a fuzzy numbering consisting of binary

numbering and the evaluation used values from 0 to 1. This step is implemented to obtain the Fuzzy Scale Value generated automatically in the FDM Template v2.0 (Jamil & Noh, 2020). The Fuzzy score value consists of m1, m2, and m3, in which m1 represents the minimum value, m2 represents the most reasonable value and m3 represents the maximum value. The three values in the triangular fuzzy number can be represented in the figure below which shows a graph of the mean triangle against the triangular value.



Fuzzy Scale Agreement Level Diagram. Source: (Bojadziev & Bojadziev, 2007).

Therefore, it can be concluded that the Fuzzy Delphi (FDM) data was to identify, evaluate and validate the elements contained in it based on three conditions of expert agreements, namely:

(1) Threshold value (d) d ≤ 0.2

An element is accepted by a group of experts if the threshold value (d) was less than or equal to 0.2 (d ≤ 0.2). This is in line with Chen (2000); Cheng & Lin (2002); Jamil & Noh (2020). Elements that get a threshold value (d) greater than 0.2 are rejected. The threshold value (d) would be calculated based on the formula stated below. For each expert, the vertex method was used to calculate the distance between the average rij (Chen, 2000). The distances of two fuzzy numbers m = (m1, m2, m3) and n = (m1, m2, m3) were calculated using the following formula:

$$d\left(\tilde{m},\tilde{n}\right) = \sqrt{\frac{1}{3}\left[(m_1 - n_1)^2 + (m_2 - n_2)^2 + (m_3 - n_3)^2\right]}.$$

(2) Expert Consensus peratus ≥ 75%;

Elements are accepted if the percentage of expert consenscus is equal to or greater than 75.0%. This acceptance is in agreement with the views of Chua & Hwang (2008); Murry Jr & Hammons (1995) as well as (Jamil & Noh, 2020). Elements that get an expert agreement percentage of lower than 75% were rejected.

(3) Fuzzy score values (A).

Elements in this study were accepted if the Fuzzy score value was less than the α-cut value above 0.5 based on Tang & Wu (2010); Bodjanova (2006); Jamil & Noh (2020). The formula used was Amax = 1/3 * (a1 + am + a2). The value of α-cut = the median value of '0' and '1',

that was α-cut = (0+1)/2 = 0.5. If the resulting A value was less than the α-cut value = 0.5, the item would be rejected because it did not indicate expert agreement. This process was called the Fuzzy Evaluation Process which was implemented to determine the position or priority (ranking) for each element that was the Defuzzification Process. This process was also known as Fuzzy Scoring. The purpose of this process was to help the researcher see the level of elements required. This ranking process would help generate data as needed based on the consensus of experts who act as the respondents of the study. The 3 conditions in the Fuzzy Evaluation process served to see whether an element was accepted or rejected based on the agreement of the expert group by comparing the value of the Fuzzy score with the value of the α-cut.

Findings

This section would describe the expert agreement that had been received for the elements that had been produced. The elements that had been produced to get expert consensus shown in Table 1 below:

Table 1
Creative Teaching Model Design Elements

No	Elements
1	Lecturers master the lesson content that will be delivered in the teaching and learning process (T&L).
2	Lecturers organize creative teaching and learning processes so that students know about the T&L process that will be implemented.
3	Lecturers are prepared for the risks encountered throughout the T&L process.
4	Lecturers are willing to empathize with the students throughout the T&L process and beyond the T&L
5	Lecturers remind the students to be sensitive to the existing learning environment.
6	Lecturers encourage the students to come up with ideas throughout the T&L process
7	Lecturers display good personalities and can be a role models to students
8	Lecturers ensure that the classroom layout and environment are in accordance with the ongoing T&L process.
9	Lecturers encourage student engagement through challenging and curios T&L activities and sessions.
10	Lecturers use effective two-way communication to interact with students.
11	Lecturers select and use appropriate and easily accessible technology to facilitate the delivery of T&L
12	Lecturers are confident and skilled in using pedagogical technology for the implementation of T&L that can enhance teaching creativity.
13	Lecturers always help students select the technological resources needed in the T&L process.
14	Lecturers guide the students to analyze the information received through the use of technology.
15	Lecturers guide the students to explore the ideas on their own.
16	Lecturers encourage students to come up with creative new ideas.
17	Lecturers have the skill to use appropriate new media as creative teaching aids in the T&L to develop a creative environment for students.

18 Lecturers generate ideas to innovate in the T&L to enhance teaching creativity.
19 Lecturers bring students' ideas towards research and innovation in the T&L assignments.
20 Lecturers diversify purposeful creative teaching methods such as social experiments, field studies, presentations, brainstorming, scholarly visits, and industrial collaboration.
21 Lecturers create social, community, and industry T&L activities.
22 Lecturers insert an element of 'surprise' in the T&L process to attract students' attention such as giving rewards.
23 Lecturers provide feedback on each activity and assignment completed by the students.
24 Lecturers ask questions creatively in the beginning, development, and closing of the T&L to encourage students to think creatively.
25 Lecturers establish *musyawarah* (discussion and negotiation) practices by training students to cooperate and collaborate with classmates.
26 Lecturers implement creative T&L activities such as project-based methods, reading, and mystery-solving, innovative e-learning as well as problem-based learning that can generate students' minds.
27 Lecturers ensure that students' activities and assignments can be linked to the field of study, student experience, and niche area of the polytechnic.
28 Lecturers guide the students to conclude at the end of the T&L by making a connection to the student's experience and the field of study.
29 Lecturers encourage students to explore the use of new technologies and media in their assignments to enhance creativity.
30 Lecturers adapt creative teaching practices to the T&L objectives implemented.
31 Lecturers encourage students to be willing to accept remarks and corrections as a learning space.
32 Lecturers apply Islamic creative methodologies in the T&L process such as adventure and observation, methodology for observing, methodology for listening, and methodology for reflection to help shape students' personalities.
33 Lecturers listen to all the ideas given by the students.
34 Lecturers always guide students to be actively involved in the discussion in the T&L process.
35 The lecturer accustoms the students to contemplate and do self-reflection at the end of the T&L process.
36 Lecturers should be flexible in adapting the environment at the polytechnic to be applied creatively in the T&L process.
37 Lecturers should be willing to participate in training to increase creativity in teaching.
38 Lecturers are always willing to make improvements in creative T&L delivery.
39 Lecturers train themselves to continuously apply moral values to students inside and outside the T&L.
40 The lecturer masters the T&L activities that will be carried out.

Expert Consensus

Fuzzy Delphi analysis conducted looked at the elements that comply with the 3 conditions that have been mentioned, namely:

i. The threshold value (d) ≤ 0.2.
ii. The percentage of the expert consencus exceeds 75%.
iii. Greater than the α-cut value = 0.5.

Elements that comply with the 3 above conditions successfully reach the experts' consencus. The results of the analysis are as shown in the Table 2 below:

Table 2
Findings of Expert Consensus

No	Condition of Triangular Fuzzy Numbers		Condition of Defuzzification Process	Expert Consensus	Ranking
	Threshold Value, d	Expert Group Agreement Percentage, %	Score Fuzzy (A)		
1	0.082	92.3%	0.931	Accepted	16
2	0.182	92.3%	0.887	Accepted	29
3	0.237	92.3%	0.844	Accepted	37
4	0.148	92.31%	0.895	Accepted	26
5	0.117	100.00%	0.895	Accepted	26
6	0.111	84.62%	0.918	Accepted	18
7	0.207	92.31%	0.867	Accepted	33
8	0.022	100.00%	0.959	Accepted	1
9	0.315	84.62%	0.836	Rejected	39
10	0.022	100.00%	0.959	Accepted	1
11	0.091	92.31%	0.923	Accepted	17
12	0.096	92.31%	0.908	Accepted	24
13	0.116	84.62%	0.910	Accepted	21
14	0.095	92.31%	0.915	Accepted	19
15	0.117	92.31%	0.915	Accepted	19
16	0.022	100.00%	0.959	Accepted	1
17	0.239	92.31%	0.851	Accepted	36
18	0.116	84.62%	0.910	Accepted	21
19	0.260	92.31%	0.838	Accepted	38
20	0.056	92.31%	0.946	Accepted	10
21	0.022	100.00%	0.959	Accepted	1
22	0.208	92.31%	0.874	Accepted	31
23	0.056	92.31%	0.946	Accepted	10
24	0.293	84.62%	0.823	Accepted	40
25	0.022	100.00%	0.959	Accepted	1
26	0.071	92.31%	0.938	Accepted	14

27	0.153	92.31%	0.900	Accepted	25
28	0.040	100.00%	0.951	Accepted	8
29	0.263	92.31%	0.854	Accepted	35
30	0.071	92.31%	0.938	Accepted	14
31	0.240	92.3%	0.867	Accepted	33
32	0.214	92.3%	0.879	Accepted	30
33	0.148	92.3%	0.895	Accepted	26
34	0.054	100.00%	0.944	Accepted	12
35	0.054	100.00%	0.944	Accepted	12
36	0.116	84.62%	0.910	Accepted	21
37	0.040	100.00%	0.951	Accepted	8
38	0.022	100.00%	0.959	Accepted	1
39	0.022	100.00%	0.959	Accepted	1
40	0.216	92.31%	0.872	Accepted	32

There were 40 elements used in the creative teaching model design process for polytechnic Islamic Education lecturers. All items had gone through expert evaluation and 39 elements were found to reach the experts' consensus because the threshold value is equal to or less than 0.2 ((d) ≤ 0.2), the experts' consensus percentage exceeds 75% and had a greater than the α-cut value = 0.5. This is also in line with Chen (2000); Cheng & Lin (2002); Jamil & Noh (2020) if the average value and expert assessment are less than the threshold value of 0.2, the item gets expert consensus.

Based on the table above, it was found that 12 elements reach 100% agreement of expert, namely elements 5, 8, 10, 16, 21, 25, 28, 34, 35, 37, 38, 39. Elements 5 and 8 were related to the learning environment for creative teaching, element 10 was related to lecturer communication. For elements 16, 21, 28, 34, and 35, were related to the creative teaching methods that can be implemented by the lecturers in the teaching and learning process. While elements 37 and 38 were related to the efforts that can be made by lecturers to improve creative teaching. Element 39 was associated with continuous efforts to inculcate good values in students.

There is one element that has not meet the expert consensus which is element 9.received expert accuracy and the element is rejected which is element 9. This element has been rejected based on the threshold value d is 0.315 which exceeds the value of 0.2. This element is related to T&L sessions that provide challenges and arouse curiosity.

As previously described, the defuzzification process serves to determine the position of an element based on expert consensus. This process was done after the researcher managed to obtain group consensus. The defuzzification values translated in Table 2 above also comply with the condition that the α-cut value obtained must be equal to or greater than 0.5 (Bodjanova, 2006; Tang & Wu, 2010; Jamil & Noh, 2020). Therefore, all elements were accepted by all experts for inclusion in the constructed model. Six elements were in the first position, namely elements 10, 16, 21, 25, 38, and 39 with a threshold value of d≤ 0.2 which was 0.02, the percentage of the expert agreement exceeds 75% with a value of 100% and the defuzzification value exceeds the value of α-cut = 0.5. The elements are arranged by ranking as shown in Table 3 below:

Table 3
Rank of Elements

Ranking	Element	No
1	Lecturers ensure that the classroom layout and environment are in accordance with the ongoing T&L process.	8
1	Lecturers use effective two-way communication to interact with students.	10
1	Lecturers encourage students to come up with creative new ideas.	16
1	Lecturers create social community and industry T&L activities.	21
1	Lecturers establish *musyawarah* (discussion and negotiation) practices by training students to cooperate and collaborate with their classmates.	25
1	Lecturers are always willing to make improvements in creative T&L delivery.	38
1	Lecturers train themselves to continuously apply moral values to students inside and outside the T&L.	39
8	Lecturers guide the students to conclude at the end of the T&L by making a connection to the student's experience and the field of study.	28
8	Lecturers should be willing to participate in training to increase creativity in teaching.	37
10	Lecturers diversify purposeful creative teaching methods such as social experiments, field studies, presentations, brainstorming, scholarly visits, and industrial collaboration.	20
10	Lecturers provide feedback on each activity and assignment completed by the students.	23
12	Lecturers always guide students to actively involve in discussion in the T&L process.	34
12	The lecturer accustoms the students to contemplate and do self-reflection at the end of the T&L process.	35
14	Lecturers implement creative T&L activities such as project-based methods, reading, and mystery-solving, innovative e-learning as well as problem-based learning that can generate students' minds.	26
14	Lecturers adapt creative teaching practices to the objectives of the T&L implemented.	30
16	Lecturers master the lesson content that will be delivered in the teaching and learning process (T&L).	1
17	Lecturers select and use appropriate and easily accessible technology to facilitate the delivery of the T&L	11
18	Lecturers encourage the students to come up with ideas throughout the T&L process	6
19	Lecturers guide the students to analyze the information received through the use of technology.	14
19	Lecturers guide the students to explore the ideas on their own.	15

21	Lecturers always help students select the technological resources needed in the T&L process.	13
21	Lecturers generate ideas to innovate in the T&L to enhance teaching creativity.	18
21	Lecturers should be flexible in adapting the environment at the polytechnic to be applied creatively in the T&L process.	36
24	Lecturers are confident and skilled in using pedagogical technology for the implementation of the T&L that can enhance teaching creativity.	12
25	Lecturers ensure that students' activities and assignments can be linked to the field of study, student experience, and niche area of the polytechnic.	27
26	Lecturers are willing to empathize with the students throughout the T&L process and beyond the T&L	4
26	Lecturers remind the students to be sensitive to the existing learning environment.	5
26	Lecturers listen to all the ideas given by the students.	33
29	Lecturers organize creative teaching and learning processes so that students know about the T&L process that will be implemented.	2
30	Lecturers apply Islamic creative methodologies in the T&L process such as adventure and observation, methodology for observing, methodology for listening, and methodology for reflection to help shape students' personalities.	32
31	Lecturers insert an element of 'surprise' in the T&L process to attract students' attention such as giving rewards.	22
32	The lecturer masters the T&L activities that will be carried out.	40
33	Lecturers display good personalities and can be a role models to students	7
33	Lecturers encourage students to be willing to accept remarks and corrections as a learning space	31
35	Lecturers encourage students to explore the use of new technologies and media in their assignments to enhance creativity.	29
36	Lecturers have the skill to use appropriate new media as creative teaching aids in the T&L to develop a creative environment for students.	17
37	Lecturers are prepared for the risks encountered throughout the T&L process.	3
38	Lecturers bring students' ideas towards research and innovation in the T&L assignments.	19
39	Lecturers encourage student engagement through challenging and curios T&L activities and sessions.	9
40	Lecturers ask questions creatively in the beginning, development, and closing of the T&L to encourage students to think creatively.	24

Discussion

According to the results above, all 40 elements have complied with the Fuzzy Delphi requirements and all these elements have obtained the experts' agreement. This indicates that all these elements can be used in creative teaching models for polytechnic Islamic Education lecturers. Thus, the result is a model design is based on the elements of creative teaching practice, lecturer skills, and the application of moral values. The results of the Fuzzy Delphi analysis show the existence of expert agreement because the value of expert agreement complies with the Fuzzy Delphi conditions. This indicates that the Delphi Fuzzy Technique can be used to obtain the consensus of experts acting as study respondents. Therefore, this analysis successfully answers the research question that shows the expert agreement on the elements contained in the design and development of creative teaching models for the polytechnic Islamic Education lecturers.

Elements 8, 10, 16, 21, 25, 38, and 39 get the ranking priority as agreed by the experts. Element 8 is related to the classroom layout and the T&L environment. This indicates that classroom management skills are key skills that need to be mastered by lecturers to implement creative teaching. The lecturer ensures that the classroom layout and environment are in line with the ongoing T&L process. If this is applied, then students can be guaranteed their comfort in a conducive and flexible environment. Physical environment, availability of resources/materials, outdoor environment, pedagogical environment (Davies et al., 2013). Recent study showed that students' satisfaction with lecturers and teaching was predicted by increased satisfaction with classrooms in higher education (Costa & Steffgen, 2020). This study indicates that some aspects such as students' satisfaction with lecturers and teaching do seem to be related to specific physical aspects such as classrooms' satisfaction.

Element 10 related to communication skills. This shows that the creative teaching model for polytechnic Islamic Education lecturers needs to include the elements of communication skills. This indicates the communication skills are one of the elements for the creative teaching of Islamic Education lecturers. Creative teaching is effective when teacher-student communication occurs because creativity is not only on the part of a teacher or a student but in the process of interaction between them (de Sousa, 2011). This is also emphasized by Sale (2015) that communication in creative teaching can enhance learning and create opportunities to be creative. Communication and interaction skills between teachers and students are required to ensure effective delivery (Jasmi, 2021). This will create a friendly relationship between the lecturer and the students, which in turn makes it easier for students to absorb the knowledge.

Next, the experts agreed to place priority on element 16, which is related to the lecturer's skills to constantly encourage students to come up with creative new ideas. This suggests a teacher that respects students' ideas coincides with the principles of creative teaching by Torrance (1961). Creative pedagogy involves educators who take a role in generating creative ideas to foster creativity among students more effectively (Jasni et al., 2020). Additionally, element 25 is related to the practice of *musyawarah* (discussion and negotiation) by training students to work together and collaborate. This element is agreed upon as an element in the creative teaching model. The practice of *musyawarah* is in accordance with the leadership characteristics of a teacher as a *murshid* (guide) (Mohamad & Sahad, 2014). Sabilan et al (2011) also stated *musyawarah* among the true meanings of a teacher's personality. Researchers argued that lecturers who practice *musyawarah* in the T&L can show their leadership in creating a healthy discussion environment, encourage cooperation and create collaborative opportunities among classmates to reach consensus.

Collaboration is an element of creative teaching (Craft, Hall & Costello, 2014; Lehtonen et al., 2016) which means the cooperation and collaboration that takes place in the T&L process becomes an element of creative teaching that can be applied in the teaching of Islamic Education lecturers.

Element 21 shows the creative teaching of polytechnic Islamic education lecturers is necessary to T&L activities that involve external parties such as society, community, and industry. These findings are consistent with Nathan et al (2013), that achieving both industry and society driven approaches as a joint agenda by implementing a balanced education policy and strategy is expected to be done by the higher education institutions towards developing a skilled and knowledgeable labor force as well as producing graduates with a good attitude, character, and social graces. Engagement with the community provides a rich opportunity for students to prepare themselves for real-world practice (Baghwan et al., 2021). The researcher thinks that the society, community, and industry involvement in the T&L activities makes the teaching of Islamic Education lecturers at the polytechnics more creative and also adds value to the student's efforts. This does not only provide a good experience to students but also creates an opportunity to apply the knowledge learned in real situations.

Elements 38 and 39 are related to the lecturer's efforts to make improvements in the delivery of creative T&L and train themselves to apply good values to students inside and outside the T&L. These elements are agreed upon by the experts to be given priority in the designed model. Researchers argue that lecturers should constantly improve their professionalism by showing commitment and efforts to enhance knowledge. This is emphasized by Jasmi (2021) for achieving the Islamic Education Teachers' professionalism in this century. Efforts to make improvements in the T&L can avoid the shortcomings and improve the teaching over time. Consistency of applying good values shows the personality of the lecturers towards their students. Both elements allow lecturers to improvise and have the determination to teach creatively to deliver meaningful lessons to the students for them to gain experience in life.

Being in the last rank is the element 24 which related to the way the lecturer asks questions creatively. Questioning is one way of shaping creativity in teaching. In this case, the researcher felt that the lecturer's form of questioning can help students in problem-solving. Lecturers should also provide opportunities for students to ask questions and lecturers guide students to provide answers so that they are actively involved in T&L. There are various methods of asking students creatively such as open-ended questions, a question to promote the senses, questions regarding the stream of consciousness (Zolfaghari et al., 2011) that can guide and motivate at the same time.

Conclusion

Overall, we conclude that Fuzzy Delphi Method (FDM) for developing and designing tools is highly recommended to be applied for tool validation. In this research, FDM was used to obtain an expert agreement on elements for creative teaching model. Through the FDM, the determination of the ranking on elements according to priority is also performed. Thus, all 39 elements that have reached the agreement will be included in the creative teaching model that will be developed by the researcher. The findings of this study are expected to contribute to the need for Islamic Education lecturers to understand the creative teaching process to be implemented in teaching at polytechnics.

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