Validating The Constructs, Sub-Constructs and Elements of The Creativity Practice Framework of Engineering Drawing Teacher (CP-EDT): The Fuzzy Delphi Method

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Abstract

The practice of creativity in teacher teaching is the most important thing to enable students' concentration and focus on class and make the ongoing Teaching and Learning (TL)more meaningful and effective. Realizing the importance of teachers' teaching creativity practices, the study identified the construct of teachers' teaching creativity practices aimed at developing a framework of teaching creativity practices that can be used as a guide and reference by all teachers and related parties. This study uses the Fuzzy Delphi Method (FDM) to obtain expert agreement and agreement on the constructs that have been obtained. 14 experts using the purposive sampling method were selected to participate in the FDM procedure. The selection of experts includes expertise and experience involved in the field of Engineering Drawing (ED), curriculum and teaching. By using FDM, five constructs containing 16 sub-constructs represent four elements for the construct of planning teaching and learning, three elements for the construct of guiding learning, managing teaching and learning, developing a creative community and assessing to develop Creativity Practice of Engineering Drawing Teacher (CP-EDT) Framework. Based on the findings of the study, it was found that the entire construct has complied with the conditions, that is, the threshold value (d) exceeds 0.2, expert consensus exceeds 75% for each construct and the defuzzification value exceeds 0.5. The findings of this study also found that 80 of the 84 elements listed representing the entire 16 sub constructs were agreed upon and met the fuzzy conditions and allowed the researcher to continue the study at the next level. Accordingly, through this finding, the CP-EDT framework development process can be continued for the next step. It is hoped that through this study, the practice of creativity in teaching as well as being able to increase the effectiveness of teaching optimally thus giving birth to creative, innovative and competitive human capital in line with the development of globalization today.

Keywords: validating, constructs, sub-constructs, elements, creativity practice framework, engineering drawing, fuzzy delphi method

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Introduction

Transformation in the current Education system requires changes in line with the development of the current Education world. Accordingly, the need for a paradigm shift of teachers is very necessary to keep up with this transformation(Ahmad Saifudin & Hamzah, 2021). An addition,

teachers also play an important role in producing human capital that is knowledgeable, has integrity, is creative, innovative and able to meet the needs of the 4.0 industrial revolution (Apak & Taat, 2018). In the efforts of teachers to carry out their responsibilities and play an important role in realizing the National Philosophy of Education, teachers should not be tied to just one way in delivering their teaching and learning. On the other hand, teachers need to try to get out of their habits and comfort with the same goal of making their teaching more interesting and able to achieve teaching and learning objectives (Hamdan, 2017; Sahrir et al., 2020). According to Mohd Nor et al., (2020) and Dagang (2016), effective teaching requires systematic planning and thinking outside the box in addition to the use of more effective teaching approaches. Meanwhile, the teaching process that prioritizes creativity in teaching can develop the entire potential of students and make the teacher's teaching more interesting and effective (Leifler, 2020). Accordingly, teachers must be aware of the importance of creativity in teaching and practice in an organized and planned manner (Sahrir et al., 2020; Mohd Nor et al., 2020). Therefore, this research is very important as an effort to respond to the recommendations of the Ministry of Education and Culture in transforming education through efforts to empower the practice of creativity in teacher teaching in addition to increasing student success. This study is in line with the study conducted by Batjo et al., (2019) and Jamil & Rabihah (2021) that the success of a student depends on the effort and creativity of the teacher in delivering the lesson. In addition, it also includes the efforts of teachers to practice creativity in their role as facilitators and even includes creativity during the teaching and learning process (Samsudin et al., 2013; Abu Hassan et al., 2018).

Problem Statements

This study aims to develop a CP-EDT framework. There are several challenges faced by teachers in practicing creativity in their teaching. Therefore, one of the identified problems is the absence of a specific guide for teachers to practice creativity for ED subjects. Based on this issue, studies related to creativity knowledge, teaching strategies and the implementation of creativity practices in teaching require full exploration to ensure the effectiveness of teaching and learning. There are also some questions, how can this teacher's teaching creativity practice help improve teaching and student learning. Accordingly, this question can be answered with a guide on Creativity Practices in teaching to help teachers improve their knowledge of creativity, plan, manage, develop creative communities and make guided assessments. It is hoped that, through this ED teacher's Teaching Creativity Practice guide, it can help teachers to equip students with 21st Century skills to produce meaningful teaching and learning.

Objectives

This study aims to identify what CP-EDT is based on expert opinion by using the FDM method. This method was used to obtain expert agreement on the list of constructs and sub-constructs of teachers' teaching creativity practices generated from the findings of thematic analysis by using the semi-structured interview method. Therefore, the research questions that need to be answered are:

1. What is the Construct of Creativity Practice for Teaching Engineering Drawing Teachers agreed upon based on expert consensus?
2. What is the sub-construct of the Teaching Creativity Practice of Engineering Drawing Teachers agreed upon based on expert consensus?
3. What are the Sub Construct Elements of the Practice of Teaching Creativity of Engineering Drawing Teachers agreed upon based on expert consensus?

Methodology

This research is using a mixed method involving a combination of qualitative and quantitative methods. This method was chosen because it involves the exploration of constructs and sub constructs by using qualitative methods and then using quantitative methods to verify the constructs and sub constructs obtained. The advantage of this method is being able to expand the research findings through a complete picture using quantitative methods. In the next phase, there are two stages involved, stage 1 using the Fuzzy Delphi method and stage 2 is a survey study. The purpose of the Fuzzy Delphi method is to obtain the agreement of a group of experts on the constructs and sub-constructs obtained from the interviews conducted in phase 1. The findings of the Fuzzy Delphi method are to complete the process of developing a framework for the teaching creativity of ED teachers. Therefore, the selection of experts becomes a priority in the Fuzzy Delphi process. Berliner, (2004) also emphasized that the importance of selecting experts with at least five years of consistency is necessary to guarantee a comprehensive understanding of the issues being studied. This study involved 14 experts related to the teaching of Engineering Drawing. This study is in line with the recommendations by (Adler & Ziglio, 1996) suggesting that the involvement of experts is around 10 to 15 experts is sufficient to be involved in the process of getting a high level of expert consensus. The expert criteria are as follows: 1. Expert in TVET Teaching 2. Expert in Teaching Engineering Drawings 3. Expert in Curriculum Development and Assessment 4. Expert in Development, research and innovation. To ensure that the research process is carried out empirically, the researcher implemented the Fuzzy Delphi method by using the procedure based on **Figure 1** as follows:

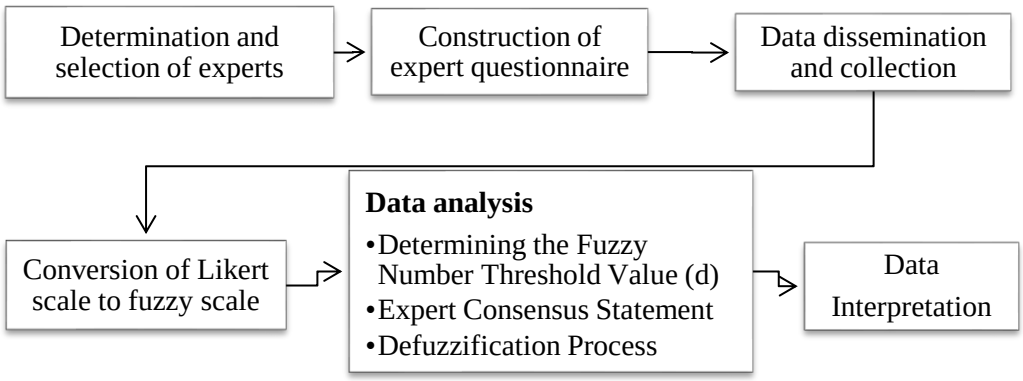

Figure 1 Fuzzy Delphi Method Approach (FDM)

Step 1: Determination and selection of experts

Researchers look for experts who meet certain criteria. A letter of appointment and approval as a panel expert is sent to experts willing to participate in the research.

Step 2: Construction of expert questionnaire

This questionnaire was built based on the themes that emerged from the interviews that were conducted with experts selected at the qualitative research stage. The questionnaire consists of a checklist of constructs and sub-constructs of ED Teachers' Teaching Creativity Practices. This study used a seven-point Likert scale to reduce ambiguity and increase expert consensus. Mustapha & Darusalam (2018) also revealed that a 7-point Likert scale is more accurate than a 5-point scale. The use of this linguistic scale is in accordance with Jamil & Rabihah (2021) stated that the higher the number of scales, the more precise and accurate the data obtained.

Step 3: Dissemination and data collection

This phase involves the distribution of survey questions to experts who have been appointed using one of two methods: There are two main methods which are meeting each expert and via e-mail. The findings are discussed face-to-face or online for improvement.

Step 4: Conversion of Likert scale to fuzzy scale

Linguistic variables are converted to fuzzy triangular numbers, and each criterion is assigned a fuzzy row of numbers to indicate the competence of K experts. The average value of the data is determined using a Microsoft Excel template.

Step 5: Data Analysis

a: Determining the Threshold Value,

The next step is the determination of the threshold value 'd'. This value shows expert agreement on each element and theme. If the d value obtained is less than 0.2 ($d < 0.2$), it indicates that all experts have reached a consensus agreement. However, if the value of d is greater than 0.2 ($d > 0.2$) it means that the second round of Fuzzy Delphi needs to be done again.

b: Percentage of Expert Consensus

Expert consensus must exceed 75% to indicate agreement. Non-agreement items were eliminated (Jamil & Rabihah, 2021)

c: Defuzzification process

The defuzzification method aims to determine the score and ranking of items. The symbol for defuzzification is Amax. The fuzzy score (A) must be greater than the median value (α cut-off value) of 0.5 to indicate expert agreement and item acceptance (Jamil & Rabihah, 2021) Accordingly, expert agreement on the elements listed can only be reached if the three conditions that have been set have been met. Structural elements that have passed these conditions can be used in forming the CP-EDT frame. **Table 1** shows the conditions of Fuzzy Delphi that must be complied with as follows:

Table 1 Fuzzy Delphi Conditions

Terms of	Analysis	Value	Interpretation
Condition 1	Fuzzy Numbering	Threshold value $d \leq 0.2$	Construct
Condition 2		Percentage of agreement > 75%	Elements accepted
Condition 3	Defuzzification Process	Fuzzy Score ≥ 0.5	

**Source: Jamil & Rabihah (2021)

Results

Findings for Research Questions 1: What are the constructs and subconstructs of Engineering Drawing teachers' teaching creativity practices based on expert consensus?

Based on the findings of the study, there are five constructs of ED teachers' teaching creativity practices based on expert consensus. The constructs are, planning lessons, guiding learning, managing lessons, developing creative communities and assessment. These five constructs are used as constructs in developing the creativity practice framework of ED teachers. Table 2 shows the constructs and sub-constructs of teachers' teaching creativity practices based on expert consensus.

Table 2. Development of the teacher's teaching creativity practice framework

The Construct of Teacher's Creativity Practice in Planning Lessons
A1.teaching objectives
A2.student background
A3.teaching strategies
A4.teaching aids
The Construct of Teacher Creativity Practices Guiding Learning
B1. learning support
B2. model yourself as a creative individual
B3. knowledge acquisition process

The Construct of Teacher Creativity Practices in Teaching Management
- C1. relevant
- C2. control of the teaching process
- C3. learning environment

The Construct of Teachers' Creativity Practices Building Creative Communities
- D1. collaborative
- D2. appreciation
- D3. responsibility

The Construct of Teachers' Creativity Practices Assessing
- E1. alternative assessment
- E2. continuous assessment
- E3. make improvements

Findings for Research Questions 2: What is the Fuzzy Delphi Value of Constructing Engineering Drawing Teacher's Creativity Teaching Practice based on expert consensus?

Table 3 shows the findings of the consensus reached among 14 experts on the five main constructs of CP-EDT. Based on the findings of the study, the five constructs have below 0.2 ($d \leq 0.2$) which is between 0.02 to 0.37. This finding shows that all experts reached a good initial consensus on the Fuzzy Delphi Method (FDM). The second requirement of Fuzzy Delphi is also accepted which is the value of Fuzzy Score (A) > 0.5 which is between 0.945 to 0.960 and the percentage of expert agreement is more than 75%.

Table 3 Fuzzy score distribution, threshold value and expert agreement percentage are the main construct of the CP-EDT Framework.

Bill	Main Construct	Triangular Fuzzy Numbers Threshold Value, d	Percent Agreement Group Expert (%)	Fuzzy Score (A)	Inter performance	Priority
1	Planning TL	0.020	100%	0.960	ACCEPT	1
2	Guiding Learning	0.037	100%	0.952	ACCEPT	4
3	Implement TL	0.051	100%	0.945	ACCEPT	5
4	Building a creative community	0.037	100%	0.952	ACCEPT	2
5	Estimate	0.037	100%	0.952	ACCEPT	2

**Conditions: Threshold value, d < 0.2: expert agreement > 75%; Fuzzy score value (A) > 0.5

What is the Fuzzy Delphi Value of the CP-EDT sub construct based on expert consensus?

The findings of the sub construct study for the CP-EDT construct based on expert consensus using the Fuzzy Delphi analysis method (FDM) are shown in Table 4.

Table 4 Threshold value, expert agreement percentage, fuzzy score and priority elements for the sub-construct of CP-EDT

Bill	Main Construct	Triangular Fuzzy Numbers Threshold Value, D	Percent Agreement Group Expert (%)	Fuzzy Score (A)	Inter Perfor-mance	Prio rity
		A. Planning Teaching and Learning				
A1	Teaching Objectives	0.088	88%	0.880	Accept	4
A2	Student Background	0.067	96%	0.926	Accept	3
A3	Teaching Strategies	0.067	98%	0.933	Accept	2
A4	Teaching Aids	0.065	98%	0.935	Accept	1
Average		0.075	95%	0.917	Accept	
		B. Guiding Learning				
B1	Learning Support	0.081	96%	0.917	Accept	2
B2	Modelling Yourself	0.099	89%	0.881	Accept	3
B3	Knowledge Acquisition Process	0.057	98%	0.942	Accept	1
Average		0.079	94%	0.911	Accept	
		C. Construct Teaching and Learning				
C1	Relevance	0.059	100%	0.938	Accept	1
C2	Control Of the Teaching Process	0.106	84%	0.858	Accept	2
C3	Learning Environment	0.107	85%	0.840	Accept	3
Average		0.091	90%	0.879	Accept	
		D. Building A Creative Community				
D1	Collaborative	0.111	84%	0.843	Accept	3
D2	Appreciation	0.070	96%	0.928	Accept	2
D3	Responsibility	0.064	99%	0.934	Accept	1
Average		0.082	93%	0.902	Accept	
E. Assessing						

E1	Alternative Assessment	0.126	76%	0.772	Accept	3
E2	Continuous Assessment	0.107	80%	0.806	Accept	1
E3	Improvement	0.118	77%	0.777	Accept	2
Average		0.117	78%	0.785	Accept	

**Conditions: Threshold value, d < 0.2: expert agreement > 75%; Fuzzy score value (A) > 0.5

There are four sub-constructs contained in the TL planning construct, namely, teaching objectives, student background, teaching strategies and teaching aids. Based on the findings of the study, the five sub constructs have a Threshold value below 0.2 ($d \leq 0.2$) which is between 0.065 to 0.088. While the second requirement of the Fuzzy Delphi Method also shows a value of Fuzzy Score (A) > 0.5 which is between 0.880 to 0.935 and the percentage of expert agreement on the five sub constructs is more than 75%.

Next, for the sub-construct to guide learning, there are three sub-constructs contained, namely learning support, self-modelling and the knowledge acquisition process. The results of the study show that the three sub constructs have a Threshold Value below 0.2 ($d \leq 0.2$) which is between 0.057 to 0.099. While the second requirement of the Fuzzy Delphi Method also shows a value of Fuzzy Score (A) > 0.5 which is between 0.881 to 0.942 and the percentage of expert agreement on the five sub constructs is over 75%.

While for the sub-construct to implement TL, three sub-constructs are contained namely relevance, control of the teaching process and learning environment. The results of the study show that the three sub constructs have a Threshold value below 0.2 ($d \leq 0.2$) which is between 0.059 to 0.107. While the second requirement of the Fuzzy Delphi Method also shows a value of Fuzzy Score (A) > 0.5 which is between 0.840 to 0.938 and the percentage of expert agreement on the five sub constructs is over 75%.

The findings of the study on the sub-constructs of developing a creative community show that the three sub-constructs listed, namely, collaborative, appreciation and responsibility comply with the three conditions set in the Fuzzy Delphi Method (FDM). The results of the study show that the three sub constructs reach a Threshold value below 0.2 ($d \leq 0.2$) which is between 0.064 to 0.111. While the second requirement of the Fuzzy Delphi Method also shows a value of Fuzzy Score (A) > 0.5 which is between 0.843 to 0.934 and the percentage of expert agreement on the five sub constructs is over 75%.

Finally, the findings of the study on the sub-construct of assessing also found that the three sub-constructs listed which are alternative assessment, continuous assessment and improvement have also complied with the three conditions set in the Fuzzy Delphi Method (FDM). The results of the study show that the three sub constructs reach a Threshold value below 0.2 ($d \leq 0.2$) which is between 0.107 to 0.126. While the second requirement of the Fuzzy Delphi Method also shows a value of Fuzzy Score (A) > 0.5 which is between 0.772 to 0.806 and the percentage of expert agreement on the five sub constructs is over 75%.

Findings for Research Questions 3: What is the Value of Fuzzy Delphi Elements Sub-construct of Expert Consensus-Based Engineering Drawing Teacher Teaching Creativity Practice?

Findings of the Fuzzy Delphi value of the Creativity Practice sub construct element in the teaching of Engineering Drawing Teachers based on expert consensus using the Fuzzy Delphi analysis method (FDM) are shown in Table 5 to Table 9.

Constructs of Planning Teaching and Learning

Figure 5 shows the expert agreement of the 28 elements contained in the teaching planning construct. All these elements have complied with the set conditions, which are Threshold values below 0.2 ($d \leq 0.2$). While the second requirement of the Fuzzy Delphi method that shows the value of Fuzzy Score (A) > 0.5 and the percentage of expert agreement on the five sub constructs is over 75%.

Table 5 Threshold value, expert agreement percentage, fuzzy score and priority sub construct elements of the TL Planning construct

Bill	Main Construct	Triangular Fuzzy Numbers				
		Threshold Value, d	Percent Agreement Group Expert (%)	Score Fuzzy (A)	Inter perfor-mance	Prio-rity
	i. Planning Teaching Objectives					
AA1	plan specifically	0.084	93%	0.890	Accept	4
AA2	plan realistically	0.092	93%	0.919	Accept	1
AA3	considering the student's ability	0.075	100%	0.910	Accept	2
AA4	adapt teaching to the content of ED subject	0.084	93%	0.890	Accept	4
AA5	measuring the performance of teachers	0.070	100%	0.902	Accept	3
	ii. Taking into account the student's background					
AB1	focus on student nee	0.117	93%	0.912	Accept	2
AB2	relate the students' existing experience	0.070	100%	0.902	Accept	3
AB3	considering the diversity of students	0.075	100%	0.924	Accept	1
AB4	expect student involvement	0.075	100%	0.924	Accept	1
AB5	adjust the assessment to the student's level	0.075	100%	0.924	Accept	1

	iii. Planning teaching and assessment strategies					
AC1	diversify student-centered activities	0.084	93%	0.890	Accept	4
AC2	encourage creative activity	0.092	93%	0.919	Accept	1
AC3	apply innovative teaching strategies	0.084	93%	0.890	Accept	4
AC4	encourage students to play an active role	0.070	100%	0.902	Accept	3
AC5	adapt teaching strategies to creative activities	0.075	100%	0.910	Accept	2
	iv. Planning the Use of Teaching Aids (TA)					
AD1	apply the use of technology in teaching	0.117	93%	0.912	Accept	2
AD2	create a creative TA	0.070	100%	0.902	Accept	3
AD3	using TA in the form of	0.075	100%	0.924	Accept	1
AD4	the use of TA to facilitate the delivery process	0.075	100%	0.924	Accept	1
AD5	do existing TA innovation	0.075	100%	0.924	Accept	1

**Conditions: Threshold value, d < 0.2: expert agreement > 75%; Fuzzy score value (A) > 0.5

Constructs Guide Learning

Table 6 shows the agreement of experts on the 16 elements contained in the construct of guiding learning. Almost all these elements have complied with the stipulated conditions, which is the Threshold value (d) below 0.2 ($d \leq 0.2$). While the second requirement Fuzzy Delphi Method also shows the value of Fuzzy Score (A) > 0.5 and the percentage of expert agreement exceeds 75%. However, there is one element, which is BA2 which does not meet the requirements because it has an agreement percentage of 57% which is less than 75% in the stipulated conditions. Accordingly, the element needs to be given attention whether it is rejected or removed.

Table 6. Threshold value, expert agreement percentage, fuzzy score and priority of sub-construct elements for the Guiding Learning construct

Bill	Main Construct	Triangular Fuzzy Numbers Threshold Value, d	Percent Agreement Group Expert (%)	Fuzzy Score (A)	Inter perfor-mance	Prio-rity
	i. Learning Support					
BA1	diversify the use of learning resources	0.094	93%	0.905	Accept	2
BA2	guide the use of educational resources effectively	0.189	57%	0.819	Reject	
BA3	apply visualization skills	0.094	93%	0.905	Accept	2
BA4	support creative activities ply visualization skills	0.142	86%	0.900	Accept	3
BA5	support creative activities	0.111	86%	0.914	Accept	1
BA6	encourage students to take responsibility in learning.	0.099	86%	0.879	Accept	4
	ii. Modelling yourself as a Creative Individual					
BB1	Translate the passion of ED subjects	0.094	93%	0.905	Accept	2
BB2	Using unique ideas to facilitate delivery	0.142	86%	0.900	Accept	3
BB3	Variety of creative teaching methods	0.094	93%	0.905	Accept	2
BB4	Share creative results	0.111	86%	0.914	Accept	1
BB5	Dare to try something new	0.107	86%	0.886	Accept	4
	iii. Knowledge Ownership Process					
BC1	give students freedom to be creative	0.094	93%	0.905	Accept	2
BC2	guide creative thinking skill	0.094	93%	0.905	Accept	2
BC3	give challenging assignments	0.142	86%	0.900	Accept	3
BC4	encourage students to think outside the box "out of the Box	0.111	86%	0.914	Accept	1
BC5	integrate learning activities with the real world	0.107	86%	0.886	Accept	4

** Conditions: Threshold value, d < 0.2: expert agreement > 75%; Fuzzy score value (A) > 0.5

Constructs to Implement Teaching and Learning

Table 7, shows the level of agreement that has been given by the expert panel to the elements contained in the construct of implementing TL. The findings show that all the elements that have been listed have complied with the entire condition of the threshold value (d) < 0.2, and all the elements show a value of d < 0.2. Meanwhile, the second condition of expert agreement shows that almost all the elements listed reach > 75% agreement. Accordingly, this finding shows that the degree of agreement between the experts has reached a good consensus, and the second round of the Fuzzy Delphi is not required because it has complied with the two main conditions of the fuzzy method. The results of the defuzzification value also show that the Fuzzy Score (A) achieved by the entire element is > 0.5. However, there are only two elements that reach less than 75% agreement, namely elements CA4, CB5, CC1 with 71%, 71% and 64% agreement. This causes the element to be dropped due to failure to comply with the conditions set in the fuzzy process. Accordingly, only 15 out of 18 elements have been agreed upon by experts to obtain a consensus assessment of the listed elements. This finding also shows that the agreed elements have been arranged in order of priority based on the value of the fuzzy score (A).

Table 7 Threshold value, expert agreement percentage, fuzzy score and priority elements of the sub construct for the construct implementing TL

Bill	Main Construct	Triangular Fuzzy Numbers				
		Threshold Value, d	Percent Agreement Group Expert (%)	Score Fuzzy (A)	Inter perfor-mance	Priority
	i. Carrying out Relevant Activities					
CA1	using TA relevant to ED subject	0.094	93%	0.905	Accept	1
CA2	combine teaching with real situation	0.138	86%	0.879	Accept	4
CA3	apply teaching activities based on subject	0.113	86%	0.893	Accept	3
CA4	relate the learning process to everyday life needs	0.166	71%	0.814	Reject	
CA5	carry out field trip activities	0.090	93%	0.898	Accept	2
CA6	organizing expertise sharing programs	0.153	79%	0.860	Accept	5
	ii. Control student concentration					
CB1	diversify the creative induction set	0.133	86%	0.871	Accept	5
CB2	sensitive to the problems faced by students	0.094	93%	0.905	Accept	1

CB3	using the kecindan element	0.138	86%	0.879	Accept	4
CB4	adapting the use of technology and multimedia.	0.113	86%	0.893	Accept	2
CB5	solve problems spontaneously	0.118	93%	0.890	Accept	3
CB6	manage time effectively	0.130	71%	0.848	Reject	
	iii. Providing an environment that encourages the creative process					
CC1	provide a complete learning space	0.211	64%	0.755	REJECT	
CC2	create an environment that encourages creative activity	0.138	86%	0.879	ACCEPT	4
CC3	provide a diverse learning environment	0.113	86%	0.893	ACCEPT	2
CC4	create a conducive classroom environment	0.118	93%	0.890	ACCEPT	3
CC5	diversify TL activities outside the classroom	0.090	93%	0.898	ACCEPT	1
CC6	involve students actively in class management	0.153	79%	0.860	ACCEPT	5

** Conditions: Threshold value, d < 0.2: expert agreement > 75%; Fuzzy score value (A) > 0.5

Building Creative Communities

Table 8 shows the agreement of experts on the 15 elements contained in the construct of developing a creative community. The findings show that all the elements that have been listed have complied with the entire condition of the threshold value (d) < 0.2, and all the elements also show a value of d < 0.2. Meanwhile, the second condition of expert agreement also shows that all 15 elements listed reach > 75% agreement. Accordingly, this finding shows that the degree of agreement between the experts has reached a good consensus, and the second round of the Fuzzy Delphi is not needed because it has complied with both main conditions. The results of the defuzzification value also show that the Fuzzy Score (A) achieved by the entire element is > 0.5. This finding also shows that the agreed elements have been arranged in order of priority based on the value of the fuzzy score (A). Overall, the elements contained in the construct of building this creative community have reached expert agreement with a good agreement value and meet the conditions set in the fuzzy process.

Table 8 Threshold value, expert agreement percentage, fuzzy score and priority the sub-construct elements of the construct of Building a Creative Community

Bill	Main Construct	Triangular Fuzzy Numbers				
		Threshold Value, d	Percent Agreement Group Expert (%)	Score Fuzzy (A)	Inter perform-ance	Priority
	i. Prioritizing Cooperation					
DA1	build small groups	0.094	93%	0.905	Accept	2
DA2	give freedom to carry out group projects	0.166	79%	0.881	Accept	4
DA3	welcome diversity of ideas	0.113	86%	0.893	Accept	3
DA4	Apply the discussion method	0.094	93%	0.905	Accept	2
DA5	various group activities	0.092	93%	0.919	Accept	1
	ii. Appreciate diversity					
DB1	foster mutual respect for group members' ide	0.118	93%	0.890	Accept	4
DB2	give positive feedback.	0.143	86%	0.893	Accept	3
DB3	encourage sharing of ideas	0.120	93%	0.905	Accept	2
DB4	give appreciation to students' efforts	0.095	93%	0.912	Accept	1
DB5	organize an exhibition of student work	0.095	93%	0.912	Accept	1
	iii. Responsible attitude					
DC1	create a culture of creativity	0.118	93%	0.890	Accept	4
DC2	giving students the opportunity to lead the community	0.143	86%	0.893	Accept	3
DC3	apply a brave attitude to bear risks	0.120	93%	0.905	Accept	2
DC4	relate an action against others	0.095	93%	0.912	Accept	1
DC5	the active role of students in the community	0.095	93%	0.912	Accept	1

**Conditions: Threshold value, d < 0.2: expert agreement > 75%; Fuzzy score value (A) > 0.5

Assessing Implementation Constructs

Table 9, shows the expert agreement of 15 elements contained in the construct of managing assessment. The findings show that all the elements that have been listed have complied with the entire condition of the threshold value (d) < 0.2, and all the elements also show a value of

d < 0.2. Meanwhile, the second condition of expert agreement also shows that all the elements listed reach > 75% agreement. Accordingly, this finding shows that the degree of agreement between the experts has reached a good consensus, and the second round of the Fuzzy Delphi is not needed because it has complied with both main conditions. The results of the defuzzification value also show that the Fuzzy Score (A) achieved by the entire element is > 0.5. This finding also shows that the 15 elements listed have been agreed upon and have been arranged in order of priority based on the value of the fuzzy score (A). Overall, the elements contained in this assessment construct have reached expert agreement with a good agreement value and meet the conditions set in the fuzzy process.

Table 9 Threshold value, expert agreement percentage, Fuzzy Score and priority elements of the sub construct of the assess construct

Bill	Main Construct	Triangular Fuzzy Numbers				
		Threshold Value, (d)	Percent Agreement Group Expert (%)	Score Fuzzy (A)	Inter performance	Priority
	i. Alternative Assessment					
EA1	apply problem solving activities	0.090	93%	0.898	Accept	3
EA2	apply Higher Level Thinking Skills	0.142	86%	0.886	Accept	4
EA3	involve students actively in assessment	0.120	93%	0.905	Accept	1
EA4	apply portfolio assignments in assessment	0.115	86%	0.900	Accept	2
EA5	integrating ICT in assessment	0.142	86%	0.886	Accept	4
	ii. Continuous assessment					
EB1	carry out scheduled assessments	0.115	86%	0.900	Accept	2
EB2	improving student weaknesses based on formative assessment	0.142	86%	0.886	Accept	3
EB3	detect the level of student mastery through formative assessment	0.120	93%	0.905	Accept	1
EB4	track the student's overall performance	0.142	86%	0.886	Accept	3
EB5	assess flexibly	0.115	86%	0.900	Accept	2
	iii. Improvements					
EC1	adjust re-teaching based on students' current performance	0.090	93%	0.898	Accept	3

EC2	refine student feedback	0.120	93%	0.905	Accept	1
EC3	re-coordinate teaching	0.090	93%	0.898	Accept	3
EC4	innovating more effective teaching methods	0.115	86%	0.900	Accept	2
EC5	sharing good practices	0.120	93%	0.905	Accept	1

**Conditions: Threshold value, d < 0.2: expert agreement > 75%; Fuzzy score value (A) > 0.5

Implication of Findings

Overall, the findings of this study show a high level of expert consensus on the five proposed constructs in developing the CP-EDT framework. All the experts involved agreed with the constructs identified by the researcher because of the theme analysis through interviews with field experts and literature highlights. These constructs were analysed using the Fuzzy Delphi analysis method. The findings show that the listed constructs have met three conditions of Fuzzy Delphi, namely threshold value, percentage of expert consent and defuzzification as proposed by Mohd Jamil and Mat Noh (2021), Chu and Hwang (2008) and Bodjanova (2006). The findings of the analysis found that a group of experts had reached a consensus by listing five main constructs in forming the CP-EDT framework. The main constructs are Planning TL, Guiding Learning, Implementing TL, building a Creative Community and Estimating.

To answer the question of the next study, expert approval of the list of sub-constructs that make up the CP-EDT construct has also been carried out. There are 16 sub-constructs listed representing five CP-EDT constructs. The findings of the Fuzzy Delphi analysis conducted found that all the sub-constructs listed have obtained good approval among experts. In this regard, the four sub-constructs contained in the TL Planning construct, namely, setting teaching objectives, adapting to students' backgrounds, developing teaching strategies and determining the use of TA have been agreed upon by experts. Furthermore, the three sub-constructs of Guiding Learning also received expert approval, namely providing learning support, modelling oneself as a creative individual and guiding the process of knowledge possession. Meanwhile, for the three sub-constructs of implementing TL agreed by experts, they are carrying out relevant activities, controlling students' concentration and providing an environment that encourages the creative process. The study also found that three sub-constructs contained in the Creative Community Development construct were also agreed upon, namely prioritizing collaboration, valuing the diversity of students and fostering a responsible attitude. Finally, three sub-constructs of assessment, namely implementing alternative assessment, implementing continuous assessment and making improvements, have also been agreed upon by expert Fuzzy Delphi. Therefore, the findings of this study also found that 80 out of the 84 elements listed representing a total of 16 sub-constructs contained in the CP-EDT framework have been agreed and meet the fuzzy conditions that have been set and enable the researcher to continue the study at the next stage, which is to develop a framework for teaching creativity practices for Engineering Drawing teachers.

Conclusion

In conclusion, the results of the Fuzzy Delphi analysis study that has been carried out, the researcher provides a preliminary overview of the prototype of the CP-EDT framework containing five main constructs which are planning TL, guiding learning, implementing TL, developing a creative community and assessing. Meanwhile, there are 16 sub constructs listed representing the five constructs of CP-EDT. The results of the Fuzzy Delphi analysis conducted found that all the sub constructs listed have obtained good agreement among experts. While the findings of this study also found that 80 of the 84 elements listed representing all 16 sub constructs have been agreed and meet the fuzzy conditions and allow the researcher to continue the study at the next level. It is hoped that this research can provide a valuable contribution and be part of a reference to improve the teaching creativity of ED teachers in Malaysia. Developing the CP-EDT framework through an empirical process is in line with the needs of the study. The effectiveness of using the Fuzzy Delphi method to reach consensus among experts helps improve the effectiveness of the CP-EDT framework development process. Through the findings of this list of constructs and sub-constructs, it is hoped to strengthen and make teacher's teaching more planned, guided and achieve its objectives while making teacher's teaching more meaningful and effective. The findings of this study are very important to enable the researcher to continue the development process of the CP-EDT framework. It is hoped that this study can create teachers' awareness of creativity in TL. Therefore, it is the researcher's hope that creativity will be used as a practice to further improve the effectiveness of teaching in an optimal manner, thereby producing human capital that is creative, innovative and competitive in line with the development of globalization today.

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