International Journal of Engineering & Technology, 7 (4.38) (2018) 1034-1038

International Journal of Engineering & Technology

Website: www.sciencepubco.com/index.php/IJET

Research paper

Expert Views on Metacognitive Strategies for Arabic Language Learning: An Application of the Fuzzy Delphi Method

Nik Hanan Mustapha[1], Nurazan Mohmad Rouyan[2], Nik Farhan Mustapha[3], Nadwah Daud*, Kamarul Shukri Mat Teh[4]

[1]International Islamic University Malaysia, Malaysia
[2] Universiti Sultan Zainal Abidin, Malaysia
[3,4] Universiti Putra Malaysia, Malaysia

Abstract

The purpose of this paper is to seek expert opinion on the importance of each of the metacognitive strategies. It uses the Fuzzy Delphi Method which is a scientific analysis technique to obtain expert consensus on a particular issue. In this paper, ten experts in the field of Arabic language teaching from five public universities in Malaysia participated to rank the importance of nine metacognitive strategies from the Strategy Inventory for Language Learning (Oxford, 1989). Findings indicate that they agree on the importance of the know-how knowledge, superiority of planning over monitoring and evaluation as well as the need to be aware on how fluent speakers perform. This paper concludes with a discussion on the experts' ranking in the light of Arabic language learning.

Keywords: *Language learning strategy, metacognitive strategies, Arabic language, Fuzzy Delphi Method*

1. Introduction

In the past five decades, the language learning strategy (LLS) has been one of major concerns in the learning and teaching of first, second or foreign languages. It refers to various approaches undertaken by language learners in order to overcome difficulties while mastering all language skills: listening, reading, writing and speaking. It is a powerful and effective aid for learners which consequently increases language competency and heightens confidence level. [1]

Studies on the LLS have dealt with individual types of strategies employed by learners: strategies for certain language skills, relationship between the LLS and other variables such as level of proficiency, gender, learning styles, creative thinking and motivation, as well as assessment on the effectiveness of the LLS instructions. Nonetheless, among all types of LLS, it is the metacognitive strategies that have received more attention than others.[2] This is attributed to the fact that metacognitive is "thinking about thinking" [3] which plays a vital role in language learning and governs the operation of other strategies. Thus, learning awareness is largely an immediate attribution of metacognitive processes among learners.

Though much has been discussed on how learners of Arabic use the metacognitive strategies in learning, [4-6] an aspect yet to be explored is the views of teachers and lecturers of Arabic on the importance of each component in the metacognitive strategies. Do they view each item with equal magnitude or are some items superior than others in terms of their effect on language learning? Such views are extremely significant in selecting the most efficient LLS for learners according to the different learning contexts, as well as determining effective practices in module development. Though no single strategy fits all learners in all situations, [7] the role of Arabic instructors with their vast expertise in facilitating students to overcome their learning problems is worth being considered.

Based on this premise, this paper explores the consensus on expert opinion on the level of importance of each metacognitive strategy based on the taxonomy by Oxford [1]. To achieve its objective, it applies the Fuzzy Delphi Method (FDM), a method of systematic analysis on expert decision which has been widely used in various fields of research.

2. Review of literature

Metacognitive strategy is part of the bigger picture of LLS. As early as 1975, Rubin has clearly referred to metacognitive as comprising two elements: monitoring of the speaking skill and evaluation of the speech of others. [8] Though she did not use the term metacognitive, her observation has concluded on the importance of the metacognitive aspect for good language learners. The term *monitoring* is also being used by Naiman, Frohlich, Stern and Todesco in a later study. [9]

O'Malley, Chamot, Stewner-Manzanares, Kupper and Russo are the first to explicitly use the term 'metacognitive' as part of the LLS. [10] Other components in their taxonomy are cognitive and socioaffective while the subcomponents of the metacognitive strategy are planning, monitoring and evaluation. Two years later, Wenden and Rubin grouped the metacognitive strategy together with the cognitive strategy under direct strategies. [11] However, Oxford viewed the classification differently and established the Strategy Inventory of Language Learning (SILL). She separates the cognitive from the metacognitive strategies. The former is part of direct strategies whereas the latter is placed under indirect strategies, based on the consideration that this 'thinking about thinking' controls the operation of direct strategies throughout the dif-

Copyright © 2018 Authors. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

ferent learning phases: planning, monitoring and controlling, and evaluation. [1] It promotes independence in learning through the development of self-awareness of the process that occurs while learning.

Due to some critics on the concept and various taxonomies of LLS, Oxford revised her taxonomy by extending the concept of metaknowledge or self-regulation to the three main strategies in her Strategic Self-Regulation Model of L2 Learning: cognitive, affective and sociocultural-interactive. Meta-strategies include metacognitive, metaaffective and metasocio-cultural-interactive. In this revision, this model assigns more control and power to meta-strategies and does not limit its dynamic interaction to cognitive alone. [12]

Previous research has highlighted that language learners are aware of their metacognitive strategies in various language skills: listening, [13-15] reading, [16-18] writing, [4 19] and speaking. [20-21] Even in specific language learning strategies such as grammar, it was found that proficient learners use more metacognitive strategies than cognitive and socio-affective ones. [22]

Among all four types of skills, reading has been much more associated with the metacognitive, a state that led to the development of an instrument known as Metacognitive Awareness of Reading Strategies Inventory (MARSI), which specifically taps into the metacognitive strategies for reading skill of native English speakers [23] and the Survey of reading Strategies (SORS) for ESL. [24] Using SORS, it was found that Arabic learners employed the problem-solving strategy considerably which explains the monitoring aspect. [5 25-27]

Simultaneously, it is evident that more proficient learners employ more metacognitive strategies than the other types of strategies. In his study on the writings of the Arabic undergraduate learners, Khaldieh finds that proficient learners use more metacognitive strategies, particularly at the monitoring and evaluation levels than their counterparts. Although the non-proficient group did report considerable attempts in evaluating their writing, their monitoring of writing progress had failed. [4] On the other hand, using the triangulation method of a writing battery test, an instrument by Oxford (Strategy Inventory for Language Learning) and concurrent verbal and written protocols, Vidal also finds that proficient learners use more metacognitive strategies in writing compared to memory and affective strategies, with evaluation strategies exceeding other types of metacognitive strategies. [28]

It has been proven that the metacognitive strategy training has helped learners in enhancing their performance. In an experimental study on Arabic EFL learners, Ismail and Tawalbeh discover that low proficient readers are able to achieve better comprehension by employing various metacognitive strategies in carrying out the reading task. [29] An integrated strategy training also provides support for the enhancement of the reading skill. For 15 weeks, Zhussupova and Kazbekova helped their EFL students to implement metacognitive strategies while reading short stories. Result indicates significant improvement in their comprehension. [30] In the light of the advancement in technology, McNamara, Levinstein and Boonthum designed a web-based tutor to teach metacognitive strategies in reading and thinking. [31] It has proven to strengthen learners' reading skill which, in turn, boosts their science performance, particularly among the higher knowledge learners [32] as well as enhances reading comprehension for those with or without prior knowledge of the strategies. [33qw2222]

Though much has been said on the importance and effectiveness of the metacognitive strategies for language learners, what practitioners regard as important is unknown. Hu and Tian are of the view that students and teachers differ in their beliefs about the effectiveness of LLS use. [34] While most research in LLS in Arabic considers learners' perceived use or relies on learners' self-report, it is imperative to identify the experts' opinion on the same subject matter. Furthermore, findings on LLS, which are solely based on self-report without any other concurrent measurement, are questionable. [35] Thus, this study is the first attempt to consider the experts' view on the LLS.

3. Methodology

The main objective of this research is to seek expert consensus on the most important metacognitive strategies in learning Arabic in Malaysia. Hence, the Fuzzy Delphi Method (FDM) is considered the most appropriate. FDM originates from the traditional Delphi which is "a method used to obtain the most reliable consensus of opinions of a group of experts by a series of intensive questionnaires interspersed with controlled feedback". [36] Emphasis is given on the 'iterative rounds' in obtaining data from experts until consensus is achieved. However, with the incorporation of the Fuzzy set theory into the traditional Delphi to overcome weaknesses in the traditional method [37], the iterative rounds are not the main concern anymore. This is clearly evident from the later definition of FDM which simply refers to an organised and structured method for collection of information from a panel of experts in a particular field. [38-39] In fact, the beauty of FDM lies in the fact that it does not require experts to be physically present together for decision-making and each of them is free to put forward his or her opinion. [40] Hence, bias is absolutely avoided. Furthermore, it is very economical in terms of utilising the technology for unlimited instrument delivery and collection. On the basis of this ever-adapting Delphi method and its broader definition, FDM is widely employed to determine group priorities and inform decision-making in various research areas such as nursing, [40-41] management, [42] education, [43-45] media, [46] and business. [47]

3.1. Instrument

This study uses the Strategy Inventory for Language Learning (SILL) [1] as the tool for data collection. SILL has been applied extensively in studies of language learning strategies across different languages and continents, [48-49] including Arabic. [5 50] The questionnaire consists of 50 items which cover six types of strategies as outlined by Oxford: cognitive, memory, compensation, metacognitive, affective and social. This paper, however, focuses only on the metacognitive strategies as the discussions on the application of the Fuzzy Delphi technique for each type of strategy is too lengthy.

The metacognitive strategies in SILL are captured through nine items. Since SILL is meant for students of all types of subject matter, the current study has rephrased the items to start with "*Arabic learners should .....*" in order to reflect the experts' opinions on the level of importance of each strategy for Arabic learners. Experts were asked to rate on 7 scales ranging from *1-not important at all* to *7-extremely important*. Though SILL uses a 5-point scale, the questionnaire in this study utilises a 7-point scale for ~~a~~ more precise and accurate data. [51]

3.2. Experts

Since FDM is purely based on expert opinion, a precise definition for *experts* is required. A poor selection of experts can affect the result in the sense that those chosen are not really qualified for the issue raised with their limited knowledge and skill. [52-53] This study employs purposive sampling through the snowball technique in order to meet the criteria for experts. Accordingly, readers are cautioned not to generalize the findings from this study to any different context.

Experts in this study are defined as university lecturers in Arabic with at least 10 years of work experience with some basic knowledge on the LLS. At the outset, 16 lecturers from public universities in Malaysia were identified and the questionnaire was sent by email. However, only 10 participants returned the completed questionnaire. Both Jones and Twiss, [54] and Adler and

Ziglio [38] are of the view that 10 experts are the minimum number of experts needed in the FDM where they can be increased to 50 and 15 respectively. Thus, this study has met the minimum criteria for the number of experts.

3.3. The Fuzzy Delphi application

The application of FDM involves several steps after the completion of data collection:

Step 1:

Changing of linguistic scales (Likert scale) to Fuzzy scales (Triangular Fuzzy Numbers). Each Fuzzy scale is represented by values of m_1, m_2 and m_3 (m_1, m_2, m_3) whereby m_1 is the minimum, m_2 is the moderate and most reasonable and m_3 is the maximum. Table 1 shows the equivalence between the linguistic scales and the Triangular Fuzzy Numbers. [37]

Table 1: Fuzzy scale

Likert scale	Linguistic scales	Triangular Fuzzy Numbers (Fuzzy Scales)
1	Extremely unimportant	(0.0, 0.0, 0.1)
2	Not very important	(0.0, 0.1, 0.3)
3	Not important	(0.1, 0.3, 0.5)
4	Fair	(0.3, 0.5, 0.7)
5	Important	(0.5, 0.7, 0.9)
6	Very important	(0.7, 0.9, 1.0)
7	Extremely important	(0.9, 1.0, 1.0)

Assuming an expert chooses 5 for the Likert scale for a particular item, the interpretation would be that the minimum value of agreement is at 0.5 or 50% for 'important', the reasonable value of agreement for 'important' is 70%, and the maximum value of agreement for 'important' is 90%, and so forth.

Step 2:

After the conversion, all responses are calculated using the following formula to obtain the threshold value (*d*) by computing distance between 2 Fuzzy numbers: [55]

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

(n_1, n_2, n_3) represent Fuzzy values for each item for each expert whereas (m_1, m_2, m_3) represent the average Fuzzy values for each item from all experts:

Step 3:

Measurement of expert consensus in FDM is based on 2 criteria:

1. Determination of threshold value (*d*) must be equal or less than 0.2, [56]
2. Percentage of expert consensus must be equal or more than 75%. [57-58] If the expert consensus value is less than 75%, the second round of FDM is to be conducted. [37 59]

Step 4:

If both requirements are fulfilled, the aggregate for Fuzzy rating on the importance of items in the metacognitive strategies is determined based on an average of Fuzzy numbers.

4. Results and discussion

Ten university lecturers of Arabic language participated in this study. Most were females (90%), PhD holders (80%) and had experience in teaching Arabic between 11-20 years (70%). Table 2 illustrates the demographic data of the experts:

Table 2: Demographic data of experts

Item	Category	Number of participants	Percentage	
Gender	Male	1	10%	
	Female	9	90%	
Level of education	Master	2	20%	
	PhD	8	90%	
Years of teaching experience	11-20 years	7	70%	
	21-30 years	2	20%	
	More than 30 years	1	10%	

The FDM analysis in Table 3 presents the experts' agreement on the importance of each metacognitive strategy in learning Arabic.

Table 3: Threshold value (d), percentage of expert consensus, average of Fuzzy numbers and ranking of items

Expert	Metacognitive items								
	1	2	3	4	5	6	7	8	9
1	0.02	0.08	0.00	0.00	0.11	0.05	0.03	0.02	0.08
2	0.02	0.11	0.00	0.00	0.28	0.11	0.03	0.02	0.07
3	0.14	0.87	0.00	0.00	0.05	0.11	0.12	0.02	0.31
4	0.02	0.11	0.00	0.00	0.11	0.05	0.03	0.02	0.08
5	0.02	0.11	0.00	0.00	0.11	0.05	0.03	0.02	0.08
6	0.02	0.11	0.00	0.00	0.11	0.05	0.03	0.02	0.07
7	0.02	0.11	0.00	0.00	0.11	0.05	0.03	0.02	0.08
8	0.02	0.11	0.00	0.00	0.11	0.05	0.03	0.02	0.08
9	0.02	0.11	0.00	0.00	0.28	0.11	0.12	0.14	0.07
10	0.02	0.11	0.00	0.00	0.05	0.05	0.03	0.02	0.08
Total value of d for each item ($d \leq 0.2$)	0.027	0.183	0.00	0.00	0.132	0.064	0.049	0.027	0.103
Percentage of consensus	100%	100%	100%	100%	100%	100%	100%	100%	90%
Average of Fuzzy number	0.957	0.890	0.967	0.967	0.893	0.937	0.947	0.957	0.910
Ranking	2	7	1	1	6	4	3	2	5

It is clear from Table 3 that each threshold value (*d*) for each item for each expert is equal or less than 0.2. Hence, the first criterion was automatically fulfilled by looking at the total threshold value (*d*) for each of the nine items which do not exceed 0.2. The percentage of expert consensus reached 100% for all items except for item 9 which had a consensus of 90%. However, it is still above the cut-off of 75% agreement. Based on these two criteria, ranking of the importance of items is determined by looking at the average of Fuzzy numbers.

Table 4: presents the level of importance for each item in metacognitive strategies according to experts' agreement:

Ranking	Item
1	Arabic learners should pay attention when someone is speaking Arabic
	Arabic learners should try to find out how to be better learners of Arabic
2	Arabic learners should try to find as many ways as they can to use their Arabic
	Arabic learners should have clear goals for improving their Arabic skills
3	Arabic learners should look for opportunities to read as much as possible in Arabic
4	Arabic learners should look for people they can talk to in Arabic
5	Arabic learners should think about their progress in learning Arabic
6	Arabic learners should plan their schedule so they will have enough time to study Arabic
7	Arabic learners should notice their Arabic mistakes and use that information to help them do better

Table 4: Ranking of metacognitive strategies according to experts

In general, experts in teaching Arabic for non-native speakers reached a high agreement on ranking the importance of the metacognitive strategies. They were of the opinion that the attentive

focus to how someone articulates speech in Arabic is the most crucial strategy. In this regard, the strategy for achieving speech fluency was seen as more superior than finding ways to improve reading for Arabic learners, which was ranked third in the list. This is not surprising for people tend to easily judge performance of any language learners by evaluating their oral proficiency rather than their writing and reading. On the other hand, it could be perhaps the students' lack of fluency in speaking Arabic more than the other language skills, which had influenced the experts in choosing the item 'paying attention to someone speaking' as being one of the top priorities. This view echoes Huang and Naerssen, [60] and Kawai [61] who affirm that obtaining a model for speaking while engaging in communication with native speakers is one of the strategies for successful language learners. Simultaneously, experts even claim the importance of focusing on oral competency by fluent speakers as at par with the strategy for continuous improvement in learning Arabic.

In addition, these findings from the experts' ranking yield the importance of the environment in second or foreign language learning. The learners' interaction with native or advanced speakers will largely facilitate learning [62-63] and boost language proficiency. [64] Though this notion yields the need for exposure to the target language environment which could be achieved by sojourn abroad, it also implies that the environment does not have to exist physically as it is. It can be manipulated by learners by creating the intended language environment through observation of speech articulation by fluent or native speakers outside the real environment, as well as continuous practices in speech utterances and language use. Several studies show that rich social interaction and close contact with native speakers obtained by studying abroad do not necessarily lead to oral proficiency without having a clear goal of achieving a satisfactory study abroad experience. [65-67] Thus, training learners on constructing the language environment within themselves and in domestic classrooms rather than by sending them abroad is much more cost-effective particularly in this period of economic downturn.

On a different perspective, these experts agree that Arabic learners are in dire need of the know-how knowledge since learning involves a complex cognitive process. [3] The knowledge includes observing how competent Arabic speakers speak and identifying possible means to communicate in Arabic to become better learners. Knowing how to approach learning effectively is more crucial than merely focusing on language errors, which ranks last on the list.

In terms of the components of metacognitive strategies which comprise planning, monitoring and evaluation, Arabic experts maintain that planning deserves much more attention from learners to overcome problems in language learning. This finding is concluded from the top three ranks on the list. Learners are expected to figure out in advance pertaining to avenues for their language advancement, practising their Arabic as much as possible as well as setting objectives for enhancement of different skills. However, at the micro level, schedule of planning to study Arabic was seen as less important. This view might be attributed to the fact that all experts are lecturers from public universities which entails that they regard university students as learners of a single discipline, unlike learners at the school level. The result is expected to be slightly different if school teachers are involved in this current study.

University students are considered adult learners in such a way that they do not learn without knowing why they need to learn. Planning is an act of understanding, knowing and reasoning which is expected from adult learners. Prior to that, they are expected to overcome most of their learning problems because of the learning experience they obtain. This condition may have also led experts in this study to view planning as the most vital strategy which contributes to effective learning of Arabic as a second language among university students.

The fact that experts view planning as the most important component in the metacognitive strategies contradicts what Arabic learners preferred most in overcoming their language learning obstacles. Alhaqbani, [5] Alsheikh [25-26] and Mohktari [27] report on the extensive use of the monitoring strategy while Khaldieh [4] finds that both monitoring and evaluation are employed most. These inconsistencies affirm Hu and Tian's view on the dissimilarity between students' and instructors' view on LLS use. [34]

5. Conclusion

The findings of this research indicate the experts' consensus on the importance of the metacognitive strategies for Arabic learners through the application of the Fuzzy Delphi method. It is interesting to note that Arabic experts agree on the prominent role of planning in managing problems faced by learners throughout the learning process. The initial stage in learning needs to be clearly considered by learners if they are to be successful later.

For Arabic instructors and course designers, inclusion of planning and other metacognitive strategies in the curriculum, both explicitly and implicitly, denotes serious attempts in producing efficient language learners. Limiting the learning process to the four walls is obviously inadequate. Learners need to be taught on how to think out of the box by helping them to consider LLS, especially these metacognitive strategies which take control of other plain strategies, as one of their life-long learning tools. The scope of the application of this tool could be extended to various learning contexts. Eventually, the enhancement of the learning process is properly maintained.

This paper concludes with the need for the application of the FDM on the other types of strategies. The identification of their importance by group experts remains unknown. FDM is a simple alternative method on a diverse range of topics which concern group consensus such as the focus group discussion. This condition warrants further studies on the matter.

Acknowledgement: This research is financially supported by the Ministry of Higher Education Malaysia under the Fundamental Research Grant Scheme (FRGS FRGS/1/2015/SSI01/UIAM/02/3).

References

[1] R. L. Oxford, Language Learning Strategies: What Every Teacher Should Know, Heinle & Heinle, Boston (1990).
[2] H. de Boer, A. S. Donker-Bergstra, and D. D. N. M. Konstons, Effective Strategies for Self-regulated Learning: A Meta-analysis. Gronings Instituut voor Onderzoek van Onderwijs, Rijksuniversiteit Groningen (2012).
[3] J. R. Anderson, Cognitive Skills and Their Acquisition, Lawrence Erlbaum, Hillsdale, NJ (1981).
[4] S. A. Khaldieh, Foreign Language Annals 33,5 (2000).
[5] A. Alhaqbani, and M. Riazi, Reading in a Foreign Language 24, 2 (2012).
[6] N. O. Alsheikh, and K. Mokhtari, English Language Teaching 4, 2 (2011).
[7] A. D. Cohen, Strategies in Learning and Using a Second Language, Routledge, London (2011).
[8] R. Joan, TESOL Quarterly 9, 1 (1975).
[9] N. Naiman, M. Frohlich, H. H. Stern., and A. Todesco, The Good Language Learner, Ontario Institute for Studies in Education, Toronto (1978).
[10] J. M. O'Malley, A. U. Chamot, G. Stewner-Manzanares, L. Kupper, and R. P. Russo, Language Learning 35, 1 (1985).
[11] A. Wenden, and J. Rubin, Learner Strategies in Language Learning, Prentice-Hall International, Englewood Cliffs, NJ (1987).

[12] R. L. Oxford, Teaching and Researching: Language Learning Strategies, Taylor & Francis Ltd., London (2011).
[13] C. Goh, ELT Journal 51, 4 (1997).
[14] C. C. Goh, and G. Hu, Language Awareness 23, 3 (2013).
[15] L. Vandergrift, Applied Linguistics 26, 1 (2005).
[16] R. Sheorey, and K. Mokhtari, System 29, 4 (2001).
[17] T. M. Chevalier, R. Parrila, K. C. Ritchie, and S. H. Deacon, Journal of Learning Disabilities 50, 1 (2017).
[18] A. S. Bergstra, Towards Effective Learning Strategies, University of Groningen, Groningen (2015).
[19] C. Leopold, and D. Leutner, Metacognition and Learning 10, 3 (2015).
[20] R. Ma, and R. L. Oxford, System 43 (2014).
[21] K. Forbes, and L. Fisher, The Language Learning Journal (2015).
[22] A. Al Abri, F. Al Seyabi, S. Al Humaidi, and A. H. Hasan, Journal of Studies in Education 7, 2 (2017).
[23] K. Mokhtari, and C. A. Reichard, Journal of Educational Psychology 94, 2 (2002).
[24] K. Mokhtari, and R. Sheorey, Journal of Developmental Education 25, 3 (2002).
[25] N. O. Alsheikh, The Strategic Reading of Arabic Native Speakers in English: An Examination of the Metacognitive Reading Strategies Used by Arabic Native Speakers When Reading Academic Texts in Arabic and English, VDM Verlag Publisher, Saarbrücken, Germany (2009).
[26] N. O. Alsheikh, The Reading Matrix 11 (2011).
[27] K. Mokhtari, in Reading Strategies of First- and Second-Language Learners: See How They Read, Edited K. Mokhtari, and R. Sheorey, Christopher-Gordon, Norwood, MA (2008), pp. 143–160.
[28] R. T. Vidal, Revista Linguagem & Ensino 5, 1 (2012).
[29] N. M. Ismail, and T. Tawalbeh, International Education Studies 8, 1 (2015).
[30] R. Zhussupova, and M. Kazbekova, Procedia-Social and Behavioral Sciences 228 (2016).
[31] D. S. McNamara, I. B. Levinstein, and C. Boonthum, Behavior Research Methods 36, 2 (2004).
[32] T. P. O'Reilly, and D. S. McNamara, American Educational Research Journal 44, 1 (2007).
[33] D. S. McNamara, T. P. O'Reilly, R. M. Best, and Y. Ozuru, Journal of Educational Computing Research 34, 2 (2006).
[34] B. Hu, and L. Tian, System 40, 2 (2012).
[35] J. G. Cromley, and R. Azevedo, Metacognition and Learning 1, 3 (2006).
[36] N. Dalkey, and O. Helmer, Management Science 9, 3 (1963).
[37] P. L Chang, C. W. Hsu, and P. C Chang, International Journal of Hydrogen Energy 36, 21 (2011).
[38] M. Adler, and E. Ziglio, Gazing into the Oracle: The Delphi Method and its Application to Social Policy and Public Health, Jessica Kingsley Publishers, London (1996).
[39] H. A. Linstone, and M. Turoff, Editor, The Delphi Method: Techniques and Applications, Addison-Wesley, Reading, MA (1975).
[40] S. Keeney, F. Hasson, and H. McKenna, Journal of Advanced Nursing 53, 2 (2006).
[41] C. McIlrath, S. Keeney, H. McKenna, and D. McLaughlin, Journal of Advanced Nursing 66, 2 (2010).
[42] A. H. Ishak, M. R. Osman, and G. Din, Turkish Online Journal of Educational Technology (2015).
[43] N. M. Noh, S. H. A. Razak, N. Alias, S. Siraj, M. R. M. Jamil, and Z. Hussin, Procedia-Social and Behavioral Sciences 103 (2013).
[44] M. Robertson, M. Line, S. Jones, and S. Thomas, Higher Education Research & Development 19, 1 (2000).
[45] S. N. A. Mohamad, M. A. Embi, and N. Nordin, International Education Studies 8, 9 (2015).
[46] D. K. Kardaras, B. Karakostas, and X. J. Mamakou, Expert Systems with Applications 40, 6 (2013).
[47] A. M. Gil-Lafuente, J. M. Merigó, and E. Vizuete, Economic Research-Ekonomska Istraživanja 27, 1 (2014).
[48] S. Na, and H. Yoon, The Asia-Pacific Education Researcher 25, 2 (2016).
[49] R. Oxford, Language Learning Strategies Around the World: Cross-Cultural Perspectives, Teaching & Curriculum Center, University of Hawaii (1996).
[50] K. S. Mat Teh, Pertanika Journal of Social Sciences and Humanities 23, 1 (2015).
[51] M. R. M. Jamil, S. Siraj, Z. Hussin, N. M. Noh, and A. A. Sapar, Pengenalan Asas Kaedah Fuzzy Delphi Dalam Penyelidikan Rekabentuk dan Pembangunan, Minda Intelek Agency, Selangor (2017).
[52] C. Powell, Journal of Advanced Nursing 41, 4 (2003).
[53] F. Hasson, and S. Keeney, Technological Forecasting and Social Change 78, 9 (2011).
[54] H. Jones, and B. C. Twiss, Forecasting Technology for Planning Decision, Macmillan Press Ltd., London (1978).
[55] C. T. Chen, Fuzzy Sets and Systems 114, 1 (2000).
[56] C. H, Cheng, and Y. Lin, European Journal of Operational Research 142, 1 (2002).
[57] H. C. Chu, and G. J. Hwang, Expert Systems with Applications 34, 4 (2008).
[58] J. W. Murry Jr, and J. O. Hammons, The Review of Higher Education 18, 4 (1995).
[59] M. R. M. Jamil, S. Siraj, N. M. Noh, Z. Hussin, and A. A. Sapar, International Journal of Business and Technopreneurship 5, 1 (2015).
[60] X. H. Huang, and M. V. Naerssen, Applied Linguistics 8, 3 (1987).
[61] Y. Kawai, in Lessons from Good Language Learners, Edited C. Griffiths, Cambridge University Press, Cambridge (2008), pp. 218-230.
[62] M. H. Long, in Handbook of Second Language Acquisition, Edited W. C. Ritchie and T. K. Bhatia, Academic Press, San Diego, CA (1996), pp. 413–468.
[63] A. Mackey, and R. Abbuhl, in Mind and Context in Adult Second Language Acquisition, Edited C. Sanz, Georgetown University Press, Washington DC (2005), pp. 179–196.
[64] R. Ellis, The Study of Second Language Acquisition, Oxford University Press, Oxford (2008).
[65] J. Yang, T. Kim, System 39 (2011).
[66] B. F. Freed, in Second Language Acquisition in a Study Abroad Context, Edited B. F. Freed, John Benjamins, Amsterdam (1995), pp. 123-148.
[67] N. Segalowitz, B. Freed, J. Collentine, B. Lafford, N. Lazar, and M. Díaz-Campos, Frontiers: The Interdisciplinary Journal of Study Abroad 10 (2004).