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Strategic Development of Flipped Framework on Educators and Learning Constructs for ESL Context: The Experts' Agreement

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Abstract

The flip learning approach has been accepted by numerous studies as a strategic approach in implementing technological-based classroom environments. Concurrently, Ministry of Education Malaysia is introducing the national educational blueprint for higher education with the focus on heavy investment in developing Blended learning environments at tertiary institutions. This poses a conundrum of how best to implement such environments effectively. Hence, much researches needed to be empirically done to prove the effectiveness of a specific Blended learning approach for an ESL context. This paper aims to ascertain the required constructs in developing a framework for flipped learning in an ESL environment. The study utilized Fuzzy Delphi method to gather and analyze viewpoints of 18 experts from the relevant fields. An online questionnaire was developed to gather the experts' agreement towards four educators and learning related constructs namely 'Flexible Environments'; 'Shift in Learning Culture'; 'Intentional Content'; 'Professional Educators'; and 42 items gathered from the literature. The FDM analysis rejected six of the items; finalizing the framework with 36 items. The framework is beneficial to ESL educators, learners and developers of technology-based learning methods

Keywords: Flip Learning Approach, Blended Learning, Framework, ESL Context, Strategic Development

Introduction

Education of the 21st century is strategically changing where technology has become a major deciding factor in determining meaningful and successful education to millennials students (Malganova & Rahkimova, 2016). These students are more comfortable to be engaged in technology, which evidently led to tech-based educational approaches like E-learning, blended learning, and flip learning (Kenna 2014; Embi 2014; Hamdan et al. 2013). Particularly at tertiary education level, these digital technology-based approaches are widely used as media to facilitate meaningful learning experience (Sankey & Hunt, 2013; Einfeld, 2013), through various forms of approaches with interaction and content for different learning styles (MOE, 2015). Flip learning is one of such teaching approaches that has the flexibility and independent disposition to jive well with the use of technology in education (Harun & Hussin, 2017). Some experts believe that the approach allows for a cornucopia of pedagogical approaches to be implemented resulting in a range of methods that is tailor-suited to each students' learning styles (Baepler, Walker & Driessen, 2014). Juhary and Amir (2014), and Bergmann & Sams (2014), assert that a number of past studies has proven the ability of flip learning approach in engaging students to be self-dependent learners. Nevertheless, there is a minimal empirical proof of the existence of perimeters to effectively use of flip learning approach in a specific educational environment (Baepler et al., 2014; Lowell et al., 2013; Chen, Wang, & Chen, 2014; O'Flaherty & Phillips, 2015). The need for such a study that investigates the development of a parameter for flip learning approach is paramount, as the approach is getting attention and momentum as a practical approach to implement technology in education internationally and in Malaysia (Juhary & Amir 2015). The introduction of the National Educational Blueprint for Higher Learning in Malaysia, which has a specific focus on making technology-based education as its mainstay (2014), propels the need for this investigation that looks at the development of a parameter to effectively use the flip learning approach In a specific context. Therefore, this study aims to determine the required constructs for a strategic development of a flip learning framework in an ESL context through experts' agreement.

Literature Review

Past studies of investigations of the Flip learning approach has mainly concentrated on the improvements of academic performance and students' behavior and motivation to learn. Previous Studies done researchers mainly focuses on how the flip learning approach has improved students' engagement and academic performance (Embi, 2014). Studies done on flipped learning approach by researchers like Butt (2014), Walter-perez & Dong (2012) found that the approach enhances students' academic performances in the lessons compared to conventional approaches. Furthermore, Bergmann &Sams (2012), Berret (2012), and Osman, Jamaludin & Mokhtar 2014, among other researchers have noted that the flip learning approach also improves the implementation of higher-order thinking skills among students as, the approach hinges on the fact that learning is personal, and that learning happens in active, and interactive environments.

The majority of studies on Flip learning concentrate on the students' perception of the approach and its effect in their learning process. These studies are conducted in various educational context. Studies such as Mclaughlin et. al (2013), which looked at the perception of pharmacology students by comparing the medium of instruction, between the Flip learning approach and conventional approaches, generally reported a positive outlook of students learning using the Flip learning approach. Other studies reported results of similar ilk in different contexts as well such as Butt (2014) Actuary, Tally & Scherer (2013) Psychology, and Deslauriers, Schelew & Wieman, (2011) Physics. What all these studies fail to do is to base their studies on a particular framework or a context-based framework to guide them to a much valid finding. This absence of framework can be explained in the novelty of the approach, as not much research has been done on identifying and describing factors that ensure effective implementation of the approach in each respective field. This research tries to answer such a paucity in literature by identifying and testing factors meted by Hamdan et. al (2013) as the basis for the development of a flipped learning framework in an ESL context.

Methodology

The study employed Fuzzy Delphi Method (FDM) in analyzing and interpreting the data gathered from the experts' responses toward the items in an online questionnaire. The experts' agreement toward the constructs is invaluable as their professional experience and knowledge on the subject matter is be pivotal in determining the right constructs for the framework. The data were analyzed in terms of the experts' acceptance or rejection of the items to measure the constructs it represents. A 5-Likert scale of agreement, from 'Strongly Disagree' (1) to 'Strongly Agree' (5) was used to rate the experts' agreement toward the questionnaire item. Apparently, four constructs, which are related to educators and learning, were identified from the works of Hamdan et al. (2013). These four constructs comprised of 42 items of statements and were presented in an online questionnaire using Google docs. The link of the questionnaire was emailed to 22 identified experts in educational technology, or ESL and educational technology. 18 experts provided their responses towards the statements which were then analysed using FDM. The quantitative analysis concerns with the (d) threshold value of the items and constructs, and the percentage of experts' agreement towards the acceptance and rejection of items and constructs.

Results

Each of the four constructs was represented by several items. These four constructs focused on educators and learning requirements in using flip learning approach. These constructs were the foundation for the 42 items developed, and analysed using FDM. For deliberation and discussion of the findings, the (d) threshold values were benchmarked at ≥ 0.2 for the constructs and items, and 75% the percentage of experts' agreement. A summary of the constructs and the number of items are: Flexible Environments (8 items), Shift in Learning Culture (9 items), Intentional Content (10 Items), and Professional Educators (15 items).

The first of the construct was the 'Flexible Environments' (FE) which had eight items (Table 2). The individual item (d) threshold value for FE1 (0.200), FE2 (0.150), FE3 (0.186), FE4 (0.169), FE6 (0.212), FE7 (0.167), and FE8 (0.147) respectively. Furthermore, the percentage of experts' agreement for the items were 100% (FE2 and FE7), 94.44% (FE4 and FE6), and 88.88% (FE1; FE3 and FE8) respectively. These items were agreed by the experts as they have met the benchmark value and the percentage of experts' agreement. However, item FE5 was rejected as the (d) threshold value of 0.212 and its percentage of experts' agreement 33% did not meet the targeted value. In overall, 'Flexible environment' construct had a (d) threshold value of 0.180 and the overall experts' agreement percentage of 86.1%.

Table 2
FLEXIBLE ENVIRONMENT (FE) CONSTRUCT THRESHOLD VALUE (D), PERCENTAGE OF EXPERTS' CONSENSUS, AND DEFUZZIFICATION

EXPERT	ITEM							
	FE1	FE2	FE3	FE4	FE5	FE6	FE7	FE8
1	0.2	0.1	0.2	0.1	0.3	0.2	0.1	0.1
2	0.1	0.2	0.4	0.2	0.3	0.1	0.2	0.1
3	0.1	0.2	0.1	0.2	0.3	0.1	0.1	0.5
4	0.2	0.1	0.1	0.1	0.3	0.1	0.2	0.2
5	0.1	0.1	0.2	0.2	0.3	0.2	0.1	0.1
6	0.2	0.1	0.2	0.1	0.0	0.2	0.2	0.1
7	0.2	0.1	0.4	0.1	0.3	0.1	0.1	0.1
8	0.2	0.1	0.2	0.1	0.0	0.1	0.1	0.1
9	0.2	0.1	0.2	0.1	0.3	0.2	0.1	0.1
10	0.1	0.2	0.1	0.2	0.3	0.4	0.2	0.2
11	0.1	0.2	0.4	0.1	0.3	0.1	0.2	0.5
12	0.1	0.2	0.1	0.5	0.3	0.1	0.2	0.2
13	0.7	0.2	0.1	0.1	0.0	0.2	0.1	0.1
14	0.4	0.2	0.1	0.2	0.0	0.1	0.2	0.2
15	0.1	0.1	0.2	0.1	0.3	0.2	0.1	0.1
16	0.2	0.1	0.2	0.1	0.3	0.2	0.1	0.1
17	0.2	0.1	0.1	0.2	0.0	0.2	0.1	0.1
18	0.2	0.2	0.1	0.2	0.0	0.1	0.1	0.1
d value for each item	0.200	0.150	0.186	0.169	0.212	0.167	0.147	0.184
d value of construct	0.177							
No. of Item d ≤ 0.2	16	18	16	17	6	17	18	16
% of Item d ≤ 0.2	88.88	100	88.88	94.44	33.33	94.44	100	88.88
% of Construct	86.10							
Fuzzy Evaluation	12.000	12.800	11.600	12.600	Rejected	12.200	13.000	12.800
Average of Fuzzy No.	0.667	0.711	0.644	0.700		0.678	0.722	0.711
Rank	6	2	7	4		5	1	3

Table 3 presents the results of FDM for the 'Shift in Learning Culture' (LC) construct. The individual items' (d) threshold values for LC1, LC2, LC3, LC4, LC5, LC6, LC8, and LC9 between 0.071 and 0.200 were agreed by experts and accepted. As well, the experts' agreement percentage of each item is between 88.88% and 100% indicated that the experts agreed with these items. Item LC7 however, was rejected due to low (d) threshold value and experts' percentage of agreement, hence, failed to achieve the benchmark values of the analysis. The overall (d) threshold value and the percentage of experts' agreement of the construct were at 0.149 and 89.50% respectively.

Table 3
SHIFT IN LEARNING CULTURE (LC) CONSTRUCT THRESHOLD VALUE (D), PERCENTAGE OF EXPERTS' CONSENSUS, AND DEFUZZIFICATION

EXPERT	ITEM								
	LC1	LC2	LC3	LC4	LC5	LC6	LC7	LC8	LC9
1	0.2	0.1	0.1	0.2	0.2	0.2	0.4	0.3	0.1
2	0.4	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.2
3	0.1	0.2	0.1	0.1	0.2	0.1	0.3	0.0	0.1
4	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.2
5	0.2	0.1	0.1	0.2	0.2	0.1	0.3	0.0	0.1
6	0.2	0.1	0.1	0.1	0.4	0.1	0.1	0.0	0.1
7	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.0	0.1
8	0.2	0.1	0.1	0.2	0.2	0.2	0.1	0.0	0.1
9	0.2	0.1	0.2	0.1	0.2	0.2	0.4	0.3	0.1
10	0.1	0.2	0.2	0.1	0.4	0.1	0.1	0.0	0.1
11	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.2
12	0.1	0.2	0.5	0.1	0.1	0.1	0.3	0.0	0.2
13	0.2	0.1	0.1	0.2	0.2	0.1	0.1	0.0	0.1
14	0.1	0.2	0.2	0.1	0.4	0.4	0.1	0.0	0.2
15	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.0	0.1
16	0.2	0.1	0.1	0.1	0.4	0.4	0.3	0.3	0.2
17	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1
18	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1
d value for each item	0.172	0.129	0.171	0.136	0.200	0.161	0.142	0.071	0.143
d value of construct	0.149								
No. of Item d ≤ 0.2	17	18	17	18	14	16	12	15	18
% of each Item d ≤ 0.2	94.44	100	94.44	100	77.77	88.88	66.67	83.33	100
% of Construct	89.50								
Fuzzy Evaluation	12.600	13.400	12.800	12.200	11.600	11.600	Reject	11.200	13.200
Average of Fuzzy No.	0.700	0.744	0.711	0.678	0.644	0.644		0.622	0.733
Rank	4	1	3	5	6	7		8	2

Table 4
INTENTIONAL CONTENT (IC) CONSTRUCT THRESHOLD VALUE (D), PERCENTAGE OF EXPERTS' CONSENSUS, AND DEFUZZIFICATION

EXPERT	ITEM									
	IC 1	IC 2	IC 3	IC 4	IC 5	IC 6	IC 7	IC 8	IC 9	IC 10
1	0.0	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2
2	0.3	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.1
3	0.0	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.1	0.2
4	0.0	0.2	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1
5	0.3	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1
6	0.3	0.1	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.2
7	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.1
8	0.3	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2
9	0.3	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2
10	0.0	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.4	0.1
11	0.0	0.1	0.1	0.2	0.4	0.1	0.2	0.1	0.1	0.4
12	0.6	0.1	0.1	0.2	0.7	0.1	0.2	0.1	0.4	0.1
13	0.0	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.2	0.2
14	0.3	0.2	0.2	0.1	0.2	0.4	0.2	0.4	0.1	0.1
15	0.0	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2
16	0.6	0.4	0.4	0.2	0.1	0.1	0.2	0.4	0.4	0.4
17	0.6	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2
18	0.3	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.1
d value for each item	0.224	0.167	0.158	0.151	0.185	0.147	0.153	0.187	0.200	0.181
d value of construct	0.176									
No. of Item d ≤ 0.2	8	18	17	18	16	17	18	16	15	16
% of each Item d ≤ 0.2	44.44	100.00	94.44	100.00	88.89	94.44	100.00	88.89	83.33	88.27
% of Construct	88.27									
Fuzzy Evaluation	Reject	12.267	12.000	12.800	11.600	11.800	12.600	12.200	12.200	12.000
Average of Fuzzy No.		0.681	0.667	0.711	0.644	0.656	0.700	0.678	0.678	0.667
Rank		3	6	1	9	8	2	4	5	7

The construct 'Intentional Content' (IC) had ten items as shown in table 4. The (d) threshold value of each item (IC2; IC3; IC4; IC5; IC6; IC7; IC8; IC9; and IC10) respectively was accepted by the experts. The percentage of experts' agreement of the accepted items are 100% for IC2, IC4, IC7, 94.44% for IC3 and IC6, 88.89% for IC5 and IC8, 88.27% (IC 10) and 83.33% (IC9) respectively. IC1 on the other hand, was rejected due to low values. The overall (d) construct threshold value and percentage were agreed and accepted at 0.175 and 88.27% respectively.

Table 5
PROFESSIONAL EDUCATORS (PE) CONSTRUCT THRESHOLD VALUE (D), PERCENTAGE OF EXPERTS' CONSENSUS, AND DEFUZZIFICATION

EXPERT	ITEMS														
	PE1	PE2	PE3	PE4	PE5	PE6	PE7	PE8	PE9	PE10	PE11	PE12	PE13	PE14	PE15
1	0.1	0.0	0.1	0.2	0.2	0.1	0.3	0.3	0.2	0.1	0.1	0.2	0.2	0.2	0.2
2	0.1	0.0	0.1	0.1	0.1	0.2	0.1	0.0	0.1	0.2	0.2	0.1	0.1	0.1	0.1
3	0.1	0.0	0.2	0.4	0.4	0.2	0.3	0.0	0.1	0.1	0.2	0.1	0.1	0.2	0.2
4	0.1	0.0	0.1	0.2	0.1	0.2	0.1	0.0	0.1	0.2	0.2	0.1	0.1	0.1	0.1
5	0.2	0.0	0.2	0.1	0.1	0.1	0.1	0.0	0.2	0.2	0.1	0.1	0.2	0.2	0.1
6	0.2	0.3	0.2	0.2	0.1	0.2	0.1	0.3	0.7	0.2	0.1	0.1	0.2	0.1	0.2
7	0.1	0.0	0.1	0.1	0.2	0.1	0.1	0.0	0.2	0.1	0.2	0.2	0.1	0.1	0.1
8	0.2	0.3	0.2	0.2	0.2	0.1	0.3	0.3	0.2	0.1	0.1	0.2	0.2	0.2	0.2
9	0.2	0.3	0.2	0.2	0.2	0.1	0.3	0.3	0.2	0.1	0.1	0.2	0.2	0.2	0.2
10	0.1	0.3	0.1	0.1	0.1	0.2	0.1	0.3	0.4	0.1	0.1	0.2	0.1	0.1	0.1
11	0.1	0.3	0.1	0.1	0.1	0.2	0.1	0.0	0.1	0.2	0.2	0.1	0.4	0.1	0.4
12	0.1	0.0	0.1	0.1	0.1	0.2	0.1	0.0	0.1	0.2	0.2	0.4	0.1	0.1	0.1
13	0.1	0.0	0.2	0.2	0.2	0.1	0.1	0.0	0.1	0.2	0.1	0.2	0.1	0.1	0.1
14	0.1	0.3	0.1	0.1	0.4	0.1	0.4	0.0	0.1	0.1	0.2	0.1	0.1	0.2	0.1
15	0.2	0.3	0.2	0.2	0.2	0.1	0.3	0.0	0.2	0.1	0.1	0.2	0.2	0.2	0.1
16	0.1	0.3	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.2	0.2	0.2	0.1	0.1	0.1
17	0.2	0.3	0.2	0.1	0.1	0.1	0.4	0.0	0.2	0.1	0.1	0.2	0.2	0.2	0.2
18	0.2	0.3	0.2	0.2	0.2	0.1	0.3	0.3	0.2	0.1	0.1	0.2	0.2	0.2	0.2
d value for each item	0.14	0.17	0.15	0.17	0.17	0.15	0.15	0.11	0.20	0.15	0.15	0.17	0.16	0.15	0.15
d value of construct	0.157														
No. of Item d ≤ 0.2	18	7	18	17	16	18	10	12	16	18	18	17	17	18	17
% of each Item d ≤ 0.2	100.0	38.9	100.0	94.4	88.9	100.0	55.6	66.7	88.9	100.0	100.0	94.4	94.4	100.0	94.4
% of Construct	87.8														
Fuzzy Evaluation	12.2	Reject	12.6	12.2	11.8	13.0	Reject	Reject	11.8	12.8	12.8	12.6	12.2	12.6	12.0
Average of Fuzzy No.	0.68		0.70	0.68	0.66	0.72			0.66	0.71	0.71	0.70	0.68	0.70	0.67
Rank	10		5	7	11	1			12	3	2	6	8	4	9

Finally, table 5 details the 'Professional Educators' (PE) construct FDM analyses. The (d) threshold value for each accepted item (PE1; PE3; PE4; PE5; PE6; PE9; PE10; PE11; PE12; PE13; PE14; and PE15) was between 0.140 and 0.195. The experts' agreement percentage were varied between 100% (PE1; PE3; PE6; PE10; PE11; and PE14), 94.4% (PE4; PE12; PE13; and PE15), and 88.9% (PE5 and PE9). Unfortunately, three items with the values of 0.170 (PE2), 0.154 (PE7) and 0.112 (PE8) and their respective percentage of 39%, 56% and 67% were rejected from the list. The overall construct (d) threshold value and experts' agreement percentage are 0.157 and 87.8%.

Conclusion

The experts agreed that the developed flip learning framework required four essential constructs with 36 items to implement the approach in the targeted context. The results of the analyses using FDM showed a drop of six items from the earlier list of items: Flexible environments (1 item), Shift in Learning Culture (1 item), Intentional Content (1 item) and Professional Educators (3 items). Utmost, the results confirmed the commonality between the participated experts and the work by Hamdan et al. (2013). All parties regarded that the four educators and learning related constructs and its items as being the strategic elements for the development of a flipped learning framework in an ESL context. The constructs and items encompassed strategic interdependent parameters of technologies, pedagogies, teaching and learning experience, for a complete 21st century teaching and learning spectrum.

The contributions of the study are the establishment of factors that is relevant and important in developing a framework for the Flipped learning approach in an ESL context. The factors investigated in the study is in line with principals of the Industrial Revolution 4.0 pivotal factors, which are: communication, collaboration, critical and creative thinking. What is apparent, is that the four principals mentioned are embedded in the factors investigated for this study and thus making it relevant in the discussions and development of any educational technology-based investigations. More importantly, the application of the Flipped learning approach in an ESL context can now be done effectively as the factors that ensure effective implementation that entails the educator's and learning perspective are identified. This ensures the flipped lessons are guided and meaningful in its implementation.

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