

# **Systematic Review and Meta-Analysis on the Effectiveness of Facebook Application in Teaching and Learning Process**

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**DOI Link:** <http://dx.doi.org/10.6007/IJARBSS/v7-i4/2907>

**Published Date:** 29 April 2017

## **Abstract**

This developing world witnessed the development of technology in life. The explosion of information technology influence the pattern and style of learning. The new millennium of learning is becoming increasingly modern and sophisticated that substitute the traditional way of education. Various mediums, channels and devices used to deliver learning patterns and techniques. One of the tools used is Facebook application. This study is a combination of Meta synthesis and Meta-analysis of the effectiveness of Facebook applications in teaching and learning process (PdP). A total of 16 samples out of 151 samples between 2010 and 2015 were selected. Data were analyzed using narrative encoding and size effect. The results obtained showed that Facebook applications can be effectively assist in the classroom PdP. The analysis of Meta synthesis is conducted to clarify that Facebook applications can improve language skills; as a source of information; and generating ideas; as a good learning interactional space. Through a meta-analysis, six size effects were calculated and the level showed is medium high (+0.53). The effect of this size make it clearer that Facebook applications have an impact and good impression on PdP

**Keywords :** Facebook Application, Meta Synthesis, Meta Analysis, Teaching and Learning

## **1.1 Introduction**

As an education policy of a country, it is an ambition to provide a world-class education as one of the discourses in the policy. The recognition given to the education sector and the implications have brought a serious impact toward the teaching profession which directly involved in conveying the knowledge (Khalid et al., 2014). The vision of world-class education intends to create a generation which possesses critical, creative and innovative thinking culture (Stewart, 2012). An individual with thinking culture can compete globally and generate ideas towards the development of civilization of knowledge, society, culture, race and nation.

Towards the new transformation of national education, the development of teaching and learning methods requires a leap of transformation. Through the Malaysia Education Blueprint (MEB 2013-2025), the government has urged all educators of all levels to implement technology in teaching process. It can encourage the students to become technology literate, and thus improve the quality of teaching internationally. Each community, particularly students, needs to have an access to modern teaching which is in line with the development of the borderless world technology. On the seventh terrace of MEB 2013 – 2025, the objective to leverage ICT has been underlined in order to improve the quality of learning in Malaysia. Within the framework of the transformation, the Ministry of Education will enhance the internet facility through Bestarinet by the year 2013 (Blueprint 2013-2025). In addition, the government will raise the concept of distance learning to improve the quality and access to learning.

### 1.2 Research Objectives and Purpose

The aim of this study is to review several previous studies on Facebook applications in the teaching and learning process. Furthermore, the objective of this study is also to identify the effectiveness of implementing Facebook for the learning and teaching process.

### 1.3 Research Question

This study is conducted to answer a research question, whether the application of Facebook can effectively help the learning and teaching process?

### 1.4 Methodology

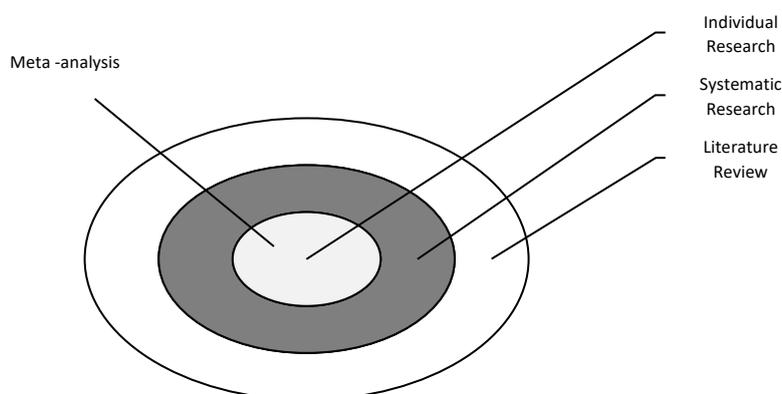


Figure 1: Research design (Perry and Hammond, 2002)

This study combines two designs, namely systematic research which focuses on qualitative findings, and meta-analysis of research for quantitative data. Systematic research is performed to increase the benefits of the findings when the narrative data are obtained by extensive findings (Haas and Springer, 1998). Through systematic research as well, the setting and selection of coding can be done more easily. Three agents are used to search for information via EBSCOhost, Scopus and Jstor. The specified keywords are Facebook, Facebook in Education, and Teaching and Learning Using Facebook. The search scope of the study is around the year 2010 to 2015. Moreover, the focus of the study is to look up on the applications of Facebook in teaching and learning process. The selected respondents are groups of students from secondary school up to higher education.

Several coding has been carried out based on specific themes, namely BH - Language, ML - Information, MI – Ideas Generation, and IN - Interaction. List of articles obtained is then coded with the letters of C1 up to C16. After being analyzed and reviewed, there are 16 of the best articles selected to be samples of this study.

### **1.5 Findings**

Through the findings and the effect of size obtained, several analyses can be made which relate to the research questions. It is to observe the effectiveness of Facebook application in the teaching and learning process. Overall, the findings of the questions show a significant impact on aspects of design study, model of the study and source of reference. The findings also show that the use of Facebook application have a positive impact on the teaching and learning process. The findings of this code are divided into four sections:

- i- Facebook application increases language skill;
- ii- Facebook application as a source of information;
- iii- Facebook application generates ideas and;
- iv- Facebook application as a field of learning interaction.

Facebook application can improve students' language skills. Meta-synthesis study shows Facebook application can improve English conversation among students (Idris and Abdul Ghani, 2013). Besides that, students' writing can be nurtured and developed through Facebook application as well as improving language communication skills among students (Lydon et al., 2014). The meta-analysis study shows a very large effect of size of 0.73 (C11) where the Facebook application can shape students' language skills.

In addition, the Facebook application is also served as a source of information in the teaching and learning process. Through the study of meta-synthesis, Facebook gives knowledge in teaching and learning process (Idris and Abdul Ghani, 2013), apart from being a tool to facilitate the process of receiving the information (Mohad Sallehuddin and Sukimi, 2014). The students also can share information and ideas with friends on a task received (Omar, 2012). Moreover, through meta-analysis also the effect of size obtained is 0.45 (C16). Thus, this shows that the Facebook application acts as a good delivery and dissemination agent of information particularly in managing and implementing the teaching and learning process in the classroom.

Generation of idea also can be an impact on the use of Facebook application to teaching and learning process. It provides a sharing of various forms of new and diverse ideas. Through Facebook application, generation of ideas for teamwork can be done collaboratively. According to a survey conducted by Ioannaou et al. (2015), a lot of teamwork has led to idea generation using the Facebook application. In addition, Facebook application can provide students with various methods, ideas, designs, patterns and inspiration for posting provided during teaching and learning process. The ideas are well-developed (Abdul Razak, 2013).

Facebook application is seen as a very effective application in the teaching and learning process via establishing interaction space in the learning process. Meta-synthesis clarifies that the Facebook application provides information medium which associates to easy learning delivery, and the interaction of Facebook is very upbeat and positive (George, 2011). Facebook application is also used as a medium of expression (Abdul Razak, 2013), and a good

interaction medium (Govani and Pashley, 2013). Good interaction can also be viewed between teachers and students through Facebook application (Teclhaimanot and Hickman, 2011). These findings are further supported by meta-analysis when the effects of sizes of 0.76 (C12), 0.53 (C13), 0.42 (C14) and 0,31 (C15) are recorded. This shows the effectiveness of Facebook application toward the teaching and learning process through the code interactions recorded.

Findings of the study are analyzed to obtain a breakdown of the information desired. The findings are divided into themes, effect of size, effect of size to the teaching and learning process, effect of size to level of education, effect of size on the size of the country, and effect of size on the achievement of the teaching and learning process.

### 1. Themes in Meta-synthesis and Meta-analysis

Themes	No. of Journal	Findings	
		Meta-analysis	Meta-synthesis
Language	3	1	2
Information	4	1	3
Idea generation	2	0	2
Interaction	9	4	5
Total	18	6	12

**Table 1 : Themes**

Based on the graph shown above, interaction indicates a total of 9 articles, of which 5 articles are meta-synthesis and 4 articles are meta-analysis. This is followed by the information theme with a total of 4 articles, which consist of 3 meta-synthesis articles and one meta-analysis article. The language theme comprises 3 articles, 2 of them are meta-synthesis and another one is meta-analysis. For the last theme which is idea generation, overall 2 articles are meta-synthesis.

### 2. Findings in Meta-synthesis According to Themes

No.	Themes	Findings	Authors
1.	Language	Use of English in Facebook conversation	Idris and Abdul Ghani, 2013
		English writing can be improved using Facebook	Lydon et al., 2014
		Facebook can improve language communication skill	Lydon et al., 2014
2.	Information	Facebook becomes field of knowledge	Idris and Abdul Ghani, 2013
		Facebook application can facilitate access to information	Mohad Sallehuddin and Sukimi, 2014
		Facebook as a platform to share information and receive tasks	Omar, 2012
3.	Idea generation	Facebook as a medium to generate ideas for teamwork	Ioannaou et al., 2015

		Facebook is selected as main medium for team learning	Ioannaou et al., 2015
		Students can diverse and develop ideas	Abdul Razak, 2013
4.	Interaction	Facebook is a medium for main information and interaction	George, 2011
		Facebook can be a medium to interact and give point of views	Abdul Razak, 2013
		Facebook can be a medium to interact in learning process	Govani and Pashley, 2013
		Good interaction between teachers and students	Teclehaimanot and Hickman, 2011
		Good interaction between students and lecturers using Facebook	Bahar Baran, 2010

**Table 2 : Findings in meta-synthesis according to themes**

### 3. Effect of meta-analysis size

No.	Themes	Authors and Year	Title Of Article	Effect of Size	Code
1.	Language	Selami Aydin, 2014	EFL Writers' Attitudes and Perceptions toward F-Portfolio Use	0.73	C11
2.	Interaction	Ebru Ozturk, 2015	Facebook As A New Community Of Inquiry Environment: An Investigation In Terms Of Academic Achievement And Motivation	0.76	C12
		Hsi-Yu Huang et al., 2014	Enhancing Students' NOS Views and Science Knowledge Using Facebookbased Scientific News	0.53	C13
		Albayrak & Yildirim, 2015	Using Social Networking Sites for Teaching and Learning: Students' Involvement in and Acceptance of Facebook_ as a Course Management System	0.42	C14
		Jeewanjit Gill et al., 2014	Facebook, Twitter and #MedEd: Investigating Social Networking Usage among Medical	0.31	C15

3.	Information	Mohd Zaidi Mahmud & Bahiyah Omar, 2013	Motif Dan Kekerapan Penggunaan Facebook Dalam Kalangan Pelajar Universiti	0.45	C16
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Table 3 :Findings in Meta-analysis according to themes

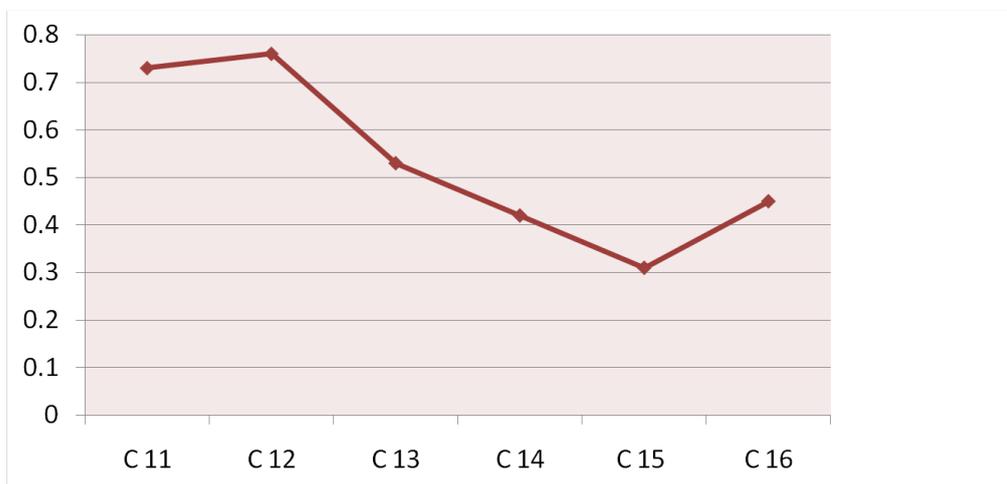


Figure 2 : Effect of meta-analysis size

Figure 2 shows six effects of sizes based on the effective use of Facebook application in the teaching and learning process. The effect of size is the difference between the average of the experimental group and the control group divided by the standard deviation of the control group. Based on graph 4 where overall of the studies are selected, three studies (C11, C12 and C13) show high effect of size more than 0.5. Meanwhile, four studies (C14 and C16) show the effect of size between 0.4 and 0.5. The remaining one study (C15) shows the smallest value of effect of size that is less than 0.3.

Table 4 to 7 exhibit the effect of size on teaching and learning process, effect of size on level of education, effect of size on type of country and effect of size on type of skills. Effect of size is divided into four stages, namely <math> < 0.2 < /math>, <math> 0.2 - 0.5 < /math>, <math> 0.5 - 0.8 < /math> and <math> > 0.8 < /math>.

Subject	Effect of size				No. of study
	ES < 0.2	0.2 < ES < 0.5	0.5 < ES < 0.8	0.8 > ES	
Teaching and learning process		3	3		6

Table 4: Effect of size on teaching and learning process

Level of education	Effect of size				No. of study
	ES < 0.2	0.2 < ES < 0.5	0.5 < ES < 0.8	0.8 > ES	
Higher education		3	2		5

Secondary school			1		1
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**Table 5: Effect of size on level of education**

Type of country	Effect of size				No. of study
	ES < 0.2	0.2 < ES < 0.5	0.5 < ES < 0.8	0.8 > ES	
Malaysia		1			1
Overseas		2	3		5

**Table 6: Effect of size on type of country**

Type of skill	Effect of size				No. of study
	ES < 0.2	0.2 < ES < 0.5	0.5 < ES < 0.8	0.8 > ES	
Language			1		1
Information		1			1
Idea generation					0
Interaction		2	2		4

**Table 7: Effect of size on achievement of teaching and learning process**

### 1.7 Discussion and Conclusion

Based on the findings of the study and discussions, the Facebook application can effectively assist the teaching and learning process in the classroom. Through the use of this application also, it gives good impact to the students toward learning in the classroom as well as giving positive outlook on students interaction for the teaching and learning process. Language skills, particularly in the use of the world's major languages which is English, can be enhanced through the use of this virtual application. Generation of information can also be extended when the source of the information can be more accessible to students. In addition, various relevant and global ideas can be created by the students in accordance with the mastery of information technology without borders.

These findings contribute to a positive outcome to the teaching and learning process aided by technology in education. By using the technology, the development of various positive aspects within a class can be displayed in various angles. Facebook application has empowered the 21st century learning process to the students. This study helps educators to find an alternative to diversify the teaching pattern. The findings of a comprehensive study can drive educators to explore more and various other technological applications that can be used in teaching such as Edmodo, Schoology and Google +.

The study also provides a realization that the Facebook application does not have a negative effect on the students alone, but it brings a lot of advantages and benefits. Moreover, Facebook application has provided a new description of its roles and functions particularly in

education pedagogy. The application has become a very interesting learning methodology which gives impact on the quality of learning and to stimulate a comprehensive learning.

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