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**BLENDED LEARNING AND THE MOST FREQUENTLY RESEARCHED OF  
COMPLEX ADAPTIVE BLENDED LEARNING SYSTEM**

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**ABSTRACT**

This qualitative research aims to find out the most commonly Complex Adaptive Blended Learning Systems used in teaching English. Thus, 65 pieces of studies were analyzed by using tables and charts which are categorized based on the content of the research reports. Quantitative data from each item found in the research reports are reported in fourteen tables. The result of the data analysis shows that the higher frequency belongs to learning support which is 18 papers (27.69%) of total Blended Learning papers on English Language Teaching. Then, it follows by teachers which are 6 papers (9.23%). Then, it is followed by content which is 5 papers (7.69%) and learners which are 5 papers (7.69%), and technology which is 3 papers (4.61%). Meanwhile, the least amount of Blended Learning Subsystem papers is the institution which is only 1 paper (1.53%). Finally, this study highlights the latest research trends from Blended Learning on English Language Teaching in order to see the status of academic discipline regularly as well as to explore the goals of learning where it has been, where it is currently and where it tends to be in the future.

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## **1. INTRODUCTION**

English Language Teaching (ELT) is still as dynamic and difficult today. In terms of use and user, the English language has experienced a significant transformation. According to authors (Renandya and Widodo, 2016), English Language Teaching is currently used by a significantly larger number of people all over the world for a wide range of communicative objectives in a variety of social settings. Furthermore, the growing use of digital technology in the classroom has altered how English is learnt and taught.

The implementation of the internet in teaching and learning English opened the way for new and innovative methods of teaching and learning. One of the most popular methods is called "Blended Learning" or "Hybrid Learning". Blended learning is one of the media technologies that provide an alternative method that is highly relevant to the recent digital

era. This is different from e-learning which utilizes only electronic technology in the teaching and learning process. Blended learning combines both traditional methods and methods based on multimedia technology in the teaching and learning process. It emerges because of the consideration that both of the methods have few merits and demerits. They are catering to different needs, demands and expectations from the educational system.

The combination of technology-mediated learning with school-based learning has made learning more complex than usual. Such complexity occurs not only because of the emergence of new elements in the learning process but also because of the relationship between these elements thus making complexity more complicated. Technology as a new element in learning has the power to transform the teaching and learning process by ushering in a new model of connected teaching. This model connects teachers and students and professional content, resources and systems that can help them improve their professional instruction and personalized learning. Educational technology refers to the use of tools, technologies, procedures, processes, resources and strategies to enhance learning experiences in a variety of settings such as formal learning, informal learning, non-formal learning, and workplace learning (Huang et. all, 2019). Besides, educational technology approaches evolved from the use of teaching tools and have rapidly expanded in recent years to include such devices and approaches as mobile technology, simulation and immersive environment, collaborative learning, flipped classroom and many more. From the definition above, it is clear that a complex system approach is needed to effectively address such complexity.

The basic idea of the construction idea of Complex Adaptive Blended Learning Systems is from the Complex Adaptive Systems framework. A Complex Adaptive System is a system of agents that interact among themselves or their environment, such that even relatively simple agents with simple rules of behavior can produce complex, emergent behavior (Carmichael et. all, 2019). Moreover, they mention that the Complex Adaptive Systems framework can be used to describe systems that encompass phenomena across many diverse environments and a wide range of disciplines.

Some of the researchers, educators and practitioners have conducted various studies to find out the meaning of Blended Learning, but there is still very little research done to underlie Blended Learning and what components of Blended Learning make this method can be applied effectively in teaching English. Researchers who have researched to explore trends from Blended Learning include (MohdAzli at. all, 2016) who researched to analyze the research trends of Blended Learning. This study was carried out by using 45 empirical studies from selected journals available online from the Educational Resources Information Center (ERIC) and analyzed those using Complex Adaptive Learning Systems. The results of this study show that there are gaps in Blended Learning research. Other researchers are (Wang at. all, 2015), their study aims to bridge the gap from previous Blended Learning studies and promote a deeper understanding of what has been achieved and what needs to be achieved by Blended Learning research. This research reviewed 87 empirical studies from Blended Learning literature at that time. The results of this study describe some of the gaps found from Blended Learning both from the research and in its application.

However, their research is limited to Blended Learning studies from 2015 to 2016. Research on Blended Learning especially in English language teaching is growing along with the development of time, therefore, this study aims to see and discover the extent of the development of research on Blended Learning in English Language Teaching during the past few years.

## **2. RESEARCH METHODOLOGY**

### **Design**

This research employed two methods of content analysis namely quantitative and qualitative content analysis. The researcher quantifies and analyzes the presence, meaning and relationships of such words and concepts, then make inferences about the messages contained in the text. (Riffle et al., 2014) point out that the essence of content analysis is to assess the content of manifest and latent. These contents can be investigated using quantitative and qualitative techniques. Moreover, (Neuendorf, 2017) said there are two forms of content; they are manifest and latent content. The manifest content is the evidence that can be seen, for instance, the words expressed in the interview or the writing contained in a text. Hence, the researcher can easily apply quantitative analysis to count the occurrence and its categories. On another hand, latent content is the underlying meaning of content such as the interpretation of an interview or the implied meaning of a text; therefore, it is related to descriptive analysis and interpretation with which qualitative content analysis deals.

In short, the application of these two techniques (quantitative and qualitative) is very suitable to find the results of this content analysis research. These techniques make the researcher able to assess large amounts of data systematically and she can also easily explain the results of the analysis including interpretation to grasp the meaning. Moreover, with the use of statistical calculations, the results of data analysis become more accurate and can be easily understood. Interpretation can also provide the implied meaning of the results of the analysis. Therefore, this Blended Learning research can be best presented through this research method.

### **Subject or Participant**

Research subjects in the qualitative study are required to obtain the information needed. (Given, 2015) said that the subject of a study is determined by the research questions of the study and the researcher chose a subject that can provide the essential key information for the research. Moreover, she revealed that the word subject implies the thing that is being studied or the topic under investigation. Based on the above understanding, it can be concluded that the research subject in qualitative research is not always in the form of a human subject or informant, therefore the subject for this study is Blended Learning subsystems, Blended Learning models while the object of research is a research report related to the topics mentioned above.

### **Data and Source of Data**

In this study, the data consisted of quantitative and qualitative data. Data in the form of numbers were collected for quantification, while qualitative were collected to find out and analyze the meaning contained in the research report. The researcher used direct observation to obtain data. She got the data from the open-source internet using certain keywords. For example, she used the keywords Blended Learning Implementation in Teaching and Learning English, Blended Learning Subsystem, The models of Blended Learning, etc. Data sources from this study were obtained from theses, dissertations, journal articles and proceedings through open-source access such as TEFLIN Journal, Asian Online Journal, ELT Journal, Lingua Scientia Journal, etc. Furthermore, the researcher examined 65 of the Blended Learning on ELT journals that have been published for the past 10 years.

### **Data Collecting Technique**

The technique of data collection can be done in various ways. Each author has a certain stage in data collection. Somehow, in general, the data in this study were collected from various relevant journals accessed on the internet. The journals to be collected are journals that are searched through the Google application using certain keywords. In the collection of these articles, the researcher pays attention to the title, abstract and also the year of publication of the journal because this study aims to see the development trends of the Blended Learning approach in the last 4 years. Thus, there were dozens of articles relevant to this research.

The way the researcher collects the data were explained in detail. The first step that was done by the researcher is to determine the population of this study, where the population of this research is the research report of the Blended Learning approach. Some of the research reports were written for dissertations, theses, journal articles and proceedings through an open-source such as International Journal of English Studies, ELT Journal, 3L Journal, etc. Journals were chosen randomly by using the keyword following the topic.

### **Data Analysis Technique**

This research will be analyzed using two content approaches namely manifest and latent. Manifest content will be analyzed by using a classification checklist while the latent content will be analyzed by looking at the contents of the selected Blended Learning research report. Therefore, the researcher will employ quantitative and qualitative analysis. The data already obtained will be computerized and processed using Microsoft Excel to see the distribution of each classification.

To find answers to research questions, the researcher will classify the data needed into tabular form, and then she used coding and categorize the data. The code is all the content and attributes associated with Blended Learning Subsystems, and Blended Learning Models contained in the research reports. While categories are characteristics of content and attributes such as introduction, literature reviews methodology, result and conclusion. In analyzing manifest data, researchers looked at the occurrences of each finding using

Microsoft Excel, such as the subject matter, research problems, research designs, data collection, data analysis, sampling techniques and validation. While latent content was analyzed in the form of explanations and descriptions.

Methods section should explain detail information about location, time, sample or population, research variables, research procedures, how the data to be collected and analysed. The number of methodology subsections can be adjusted.

### 3. RESULTS AND DISCUSSION

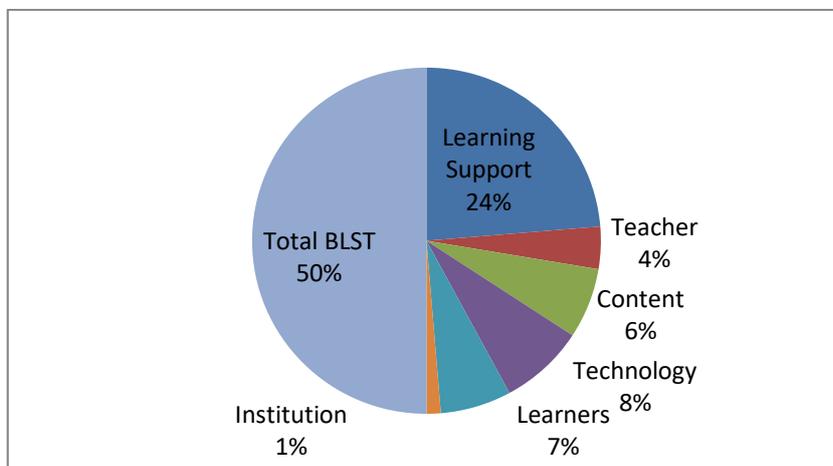
#### Result

To determine the latest trend and development of studies on blended learning since 2010, the researcher used the Blended Learning theory on ELT. To be specific, she used Blended Learning subsystems such as learning support, teacher, content, technology, learners and institutions. The classification of Blended Learning Subsystem (BLST) is presented in table as follows.

Table 1. The classification of Blended Learning Subsystem (BLST)

No	Blended Learning Subsystem	Frequency	Percentage
1.	Learning Support	18	27.69
2.	Teacher	6	9.23
3.	Content	5	7.69
4.	Technology	3	4.61
5.	Learners	5	7.69
6.	Institution	1	1.53
<b>Total</b>		<b>38</b>	<b>58.46</b>

Table 1 presents the frequency and the percentage for every blended learning subsystem. The table shows that the higher frequency belongs to learning support which is 18 papers (27.69%) of total Blended Learning papers on ELT. Then, it follows by technology which is 6 papers (15%). Then, it is followed by content (7.69%) and learners (7.69%), and teachers (4.61%). Meanwhile, the least amount of BLST papers is an institution which is only 1 paper (1.53%). The above result is presented in the following chart



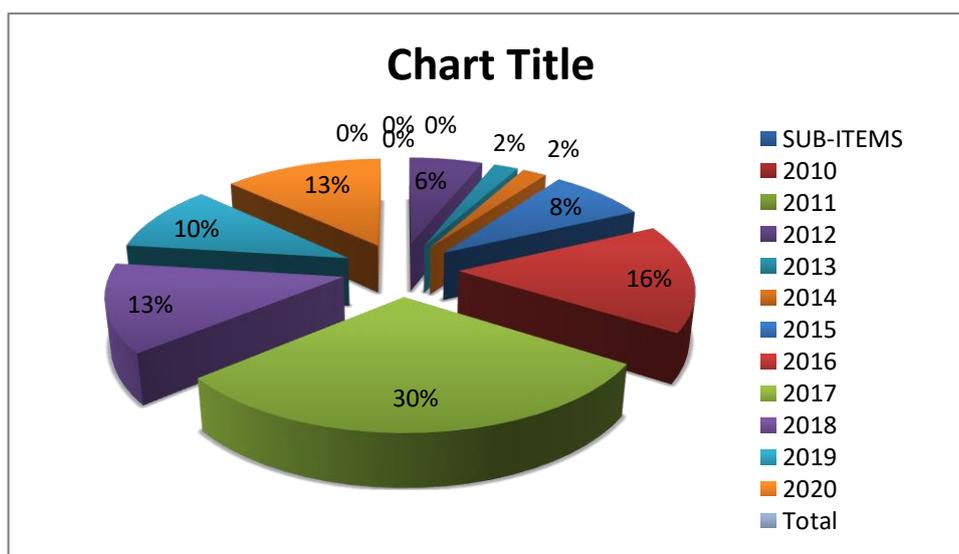
**Year of Publication**

In this research, the researcher collected the research papers concerning blended learning randomly from the internet. The trends of research report found of each year are presented in Table 2

**Table 2. Year of Publication of Journal Articles about Blended Learning**

CODE	SUB-ITEMS	F	%
YP01	2010	0	0
YP02	2011	0	0
YP03	2012	5	7.69
YP04	2013	1	1.53
YP05	2014	2	3.07
YP06	2015	8	12.30
YP07	2016	12	18.46
YP08	2017	8	12.30
YP09	2018	9	13.84
YP10	2019	7	10.76
YP11	2020	13	20
Total		<b>65</b>	<b>100</b>

Table 2 presents the total of research reports found each year. The tables show that the biggest number of the research found was in 2020 (20%). Meanwhile, 12 papers (18.46%) were published in 2016 and 9 papers (13.84%) were published in 2018. Then, they were followed by 2017 (12.30%), 2015(12.30%), 2019 (10.76%), 2012 (7.69%), 2014 (3.0%), and 2013 (1.53%). Unfortunately, there were no journal articles found published in 2010 and 2011. The result of these percentages are presented in the following chart



**Participant**

Participants are one of the elements analyzed in this research. Participants refer to people, groups, places, or combinations which provide the information needed in research to answer research questions or to prove hypotheses. In educational research usually, the participants are the students, teachers, tutors, staff at school or the principal. The categories of participants from the data of journal articles are presented in table 3

Table 3 Categories of Participants

No	Sub-item	Frequency	%
1.	University Students-English Art	1	1.53
2.	University Students –Pharmacy Academy	1	1.53
3.	University Students –Education Faculty	1	1.53
4.	Public School Students	1	1.53
5.	Private School	1	1.53
6.	Bachelor International Study Program Students	1	1.53
7.	Institution staff, head faculty, etc	1	1.53
8.	Principal of schools	1	1.53
9.	Foreign Language Instructor	1	1.53
10.	Graduate Physical Students	1	1.53
11.	Students across Institution	1	1.53
12.	Elementary School Students	1	1.53
13.	Vocational School	1	1.53
14.	Students of Graduate Program	2	3.076
15.	Tutor	2	3.07
16.	Tutor and Students	2	3.07
17.	Foreign Language Students	2	3.07
18.	Computer Course Students	2	3.07
19.	Undergraduate Students	2	3.07
20.	Pre-Service Teacher	2	3.07
21.	Senior High School Students	2	3.07
22.	Secondary and Senior High School Students	2	3.07
23.	Lecturer	3	4.61
24.	All level teachers in Indonesia	3	4.61
25.	Secondary School	4	6.15
26.	Students and Teacher	6	9.23
27.	University Students	7	10.76
28.	University Students – English Department	11	16.92
29.	Not Available	11	16.92
<b>Total</b>		<b>65</b>	<b>100</b>

Table 3 shows that the majority of the data comes from the articles with no available participants (16.92%) and English Department students (16.92%). The data shows that the majority of the participants involved in the articles are students from various universities. The participants from university students was 7% and it was followed by the participant from university students without acknowledging the faculty or the department (10.76 %).

Meanwhile, participants from secondary school were 6.15% and it was followed by the participant from all level teachers in Indonesia (4.61%), and lecturers (4.61%). Furthermore, participants from undergraduate universities, foreign language students, pre-service teachers, and secondary senior high school students were 2% in each. The least frequent participants were the participants from other groups such as tutors, principals, teachers, lecturers, institution staff, private schools, etc.

#### **4. DISCUSSION**

Based on the content analysis of articles about Complex Adaptive Blended Learning Subsystem, it was found that the frequency and the percentage for every blended learning subsystem. The data shows that the higher frequency belongs to learning support which is 18 papers (27.69%) of total Blended Learning papers on ELT. Then, it follows by teachers which are 6 papers (9.23%). Then, it is followed by content which is 5 papers (7.69%) and learners which is 5 papers (7.69%), and technology which is 3 papers (4.61%). Meanwhile, the least amount of BLST papers is the institution which is only 1 paper (1.53%)

The result of this analysis is similar to the result of the CABLS analysis in general by (Yeop, 2016) who analyzed the method and the finding of the Blended Learning approach utilizing literature review. He also found that the learning support subsystem was the most frequently studied by researchers in their studies.

This result proves that learning support is one of the most important components in ensuring learning success. According to a survey of the literature in this research, the learning support subsystem is the most studied subsystem, with an equivalent number of studies as the learner subsystem. In the quest to find the best practices for blended learning, most studies have focused on the learning support subsystem. Among these is research by (Arwa et. all, 2016), which explains the roles of learning assistance to teachers to assure success in the blended learning process. Learning support, according to (Wang et. all, 2015), must be improved based on learner needs, instructor skills, and technological advancements while receiving full institutional support to achieve success. The success of blended learning will be determined by the strong relationships between the subsystems that make up the learning support subsystem.

Furthermore, the teacher is also being one of the most concerned by the researchers in their studies. According to (Mirriahi at. all, 2015), the roles of teachers in the learning process have evolved new learning methodologies. They also insisted that the interaction between teacher–institution subsystems, their findings also revealed that the institution plays a significant role in the development of teachers' competency.

Meanwhile, 7.69% of the research about blended learning on ELT concerned about content. Blended learning, according to (Mazur at. all, 2015), can maximize the presentation of learning content while also providing a choice of delivery options. Learners would be more motivated and able to improve learning effectiveness if they could learn according to their abilities (autonomy). Changes in the blended learning approach's content delivery idea from traditional delivery to online learning have directly increased the quality and success of the learning process, resulting in good outcomes.

The result also shows that 7.69% of the blended learning papers about ELT concerned students. The majority of the studies' findings focused on the effectiveness of blended learning in terms of student achievement; blended learning's contribution to the development of new learning skills among students; and positive feedback (attitude and character) from students about blended learning. For example, a study by (Costle & Lange, 2016) found that learner satisfaction (needs met) has a significant impact on learning effectiveness.

However, there is only 3% of the papers discussed technology. It is in contrast to the result of the previous study about blended learning which found that technology is the most concern by researchers in studies. The majority of the studies' findings focused on: 1) the effectiveness of blended learning in terms of student achievement; 2) blended learning's contribution to the development of new learning skills among students, and 3) positive feedback (attitude and character) from students about blended learning. For example, a study by (Costley & Lange, 2016) found that learner satisfaction (needs met) has a significant impact on learning.

Results and Discussions contain results obtained by author during the research activities. The results of the research submitted in advanced as whole which continues by doing the discussion. The discussions are presented systematically from general to the specific. The data can be presented with tables or figures. Results and discussions must also interconnect with theory that used. Avoid excessive use of citations and discussion of published literature.

## 5. CONCLUSIONS

This study is intended to find out the Complex Adaptive Blended Learning Systems which are commonly used in teaching English. The data are in form of a research report concerning the topic of Blended Learning. Thus, the researcher randomly collected 65 pieces of research reports from the internet to avoid bias in determining the issues about Blended Learning on ELT. The result of the data analysis shows that learning support is the highest frequently blended learning subsystem studied by researchers. It supports the existing previous research finding that learning support was being one of the most frequent issues discussed in research about blended learning subsystems. On the contrary, the institution is and teacher was the least frequently studied by researchers which means that there was still limited articles concern about the issues of teacher in Blended learning Subsystem context.

The result of this research shows that there are limited sources or articles discuss institution and teachers in Blended Learning Subsystem in term of ELT. It implies that future researches about teachers and institutions in blended learning systems about ELT are about still needed to be enriching. It will enrich the literature about the role of teachers and institutions in the context of blended learning and their limitation.

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