UNDERSTANDING STUDENTS’ LEARNING EXPERIENCES IN
THE DIGITAL AGE

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ABSTRACT

The growth of digital technology has significantly shaped the way students learn. Surrounded by web-enhanced learning sources, various learning activities are available that have contributed to the change in students’ learning. Based on an interpretative approach of the Complexity Theory, the current qualitative case study aims to investigate how students learn English in the digital era. The sample consists of 42 students of a university in Bogor, West Java, Indonesia. The instrument used for collecting the data includes (a) questionnaire used to examine the accessibility to the digital based learning of the students selected for the sample and (b) narrative frames to explore the students’ learning experiences in the digital era. The study reveals that students’ learning in the digital age is self-organizing which offers the tendency for the students to be autonomous. The study also affirms that the current in-class teaching and learning practices do not align with students’ learning experiences in the digital age. The students felt what they got in classes has failed to satisfy and enrich their understanding of the subject taught. It is thus, as an implication the study has, the integration of learning sources into digital learning sources is encouraged.

Keywords: Digital age, Learning experiences, Complexity theory

A. INTRODUCTION

Almost all aspects of human life are inseparable from the increasing growth of digital technology, including education. The rapid expansion and development of this technology and information even has been as the key feature of the 21st-century learning (Siregar et al., 2020). However, the way people interact with such technology may differ which depends on what generation they belong to (De & Franco, 2013). As to the present generation, they are ‘born digital’ who have access to networked digital technologies, and they all have the skills to use those technologies (Obaidullah & Rahman, 2018; Palfrey & Gasser, 2008). For this reason, it is safe to say that people living in the current era are the individuals who have been familiar with digital technology and its applications. In the context of learning in this digital age, the way students learn may differ from others. Some will learn only when they really wish to know and learn about something (Prensky, 2012). Besides, the students make use of digital learning resources to learn on their own (De & Franco, 2013). In other words, each student has his or her own preferences on how they learn in the web-enhanced environment.

Based on the study above, the current study tries to explore the issues related to the learning experiences of the students of English Department of Universitas Ibn Khaldun located in Bogor, West Java. Universitas Ibn Khaldun Bogor has been trying to evolve its vision in which all academic activities should be based on the digital technology. The university, particularly the English Education Department, has been trying to integrate the digital
technology into teaching and learning activities. Students have been offered the access to digital based learning activities with an expectation that the students can learn effectively and efficiently. In this study, students’ learning experiences in the digital age are viewed from the lens of Complexity Theory (henceforth CT) which so far has not been extensively carried out. The available studies concerning learning in the digital age are mostly examined through the lens of mechanistic learning theories (Johnson, 2009). An example of deploying this theory was by Franco in exploring students’ perception as the digital natives on learning activities (De & Franco, 2013). His study revealed that digital native students tend to have a different perception of what they are offered at school. More importantly, Franco found that most of the students missed the proper pedagogy aligned with their expectations and needs.

The current study manages to depict a comprehensive understanding of English learning experiences of the students living in this digital age viewed from CT perspectives. Specifically, the study addresses: “How do the students who live in the digital age learn?”

B. LITERATURE REVIEW

1. Learning in the Era of Digital

Nowadays, educators have been trying to develop their teaching activity by making use of technology. Such measure is not without reason, because today’s generation is living in the period where technology is growing rapidly. They are ‘born digital’ since they all have the access to networked digital technologies and have the skills to use those technologies (Palfrey & Gasser, 2008). Their life experiences are therefore described to be molded by experiences with digital technologies (Jukes et al., 2010). Based on a comprehensive review of the literature (Gasser et al., 2012), learners living in the digital era have been identified as the individuals who live in the world where most of their activities are mediated by technology. Briefly, such learners have been identified as the individuals who spend their times with computers and video games. They are constantly connected to the online world and have the capacity to use digital technology for searching the information they need. In the context of learning, a study points out that digital generation will learn only when they really wish to know and learn about something (Prensky, 2012). More broadly, they are the individuals who live in the world of computers and video games (Gasser et al., 2012), constantly connected to the online world (Jukes et al., 2010), have the capacity to use digital technology transparently (Miller, 2011), and feel comfortable in online spaces (Palfrey & Gasser, 2008). In other words, digital generation makes use of digital media as an integral part of their lives. Even though, the way they learn in the web-enhanced world might be different from one another (De & Franco, 2013). For this reason the need to design learning delivered digitally that enable students to actively engage with educational content is required (Luna, 2015). Thus, teachers should empower digital learning platforms as part of their instruction activity to make learning more engaging, interesting, and interactive. An instructor, for example, might have students use the software in the classroom as part his day’s instruction, or have the students to use the software at home for extra practice with the course content (Falck et al., 2018).

There are numerous types of online learning platform the students can choose which will depend on their online program needs. This, will in turn, depend on some factors such as accessibility and understanding on technical considerations. After all, finding information on the website is the most convenient way for the students in the digital age to produce a positive attitude towards learning (De & Franco, 2013). In general, the types of online activities include online chatting, social networking, online shopping, lyrics, news online
games, educational websites, YouTube, Google, email checking and sending, music and video downloads, and others.

There are some important characteristics of digital age which include authentic resources and activities, online books, collaboration and communication, hypermedia, skills of integration, just in time learning, knowledge and language, style, registers, multimedia, netiquette, online tools, production, reading, spell checks, text manipulation, and web page publication (Padmavathi, 2019). In terms of language learning, Padmavathi suggests that language skills combined with digital skills can be effective since the learning is up to date, interesting motivating and relevant for digital age. However, learning in the digital era is complex and dynamic since it involves mix of work, social life and education system that we need to understand alongside the different theories of education and learning (Jones, 2015). Therefore, the current learning practices cannot be perceived as being true at some point in the future because the environment will demand change. CT has an answer how it undermines the traditional theoretical basis of individual differences as distinct and stable learner attributes (Ortega, 2017). In the lens of CT, the components of learning described as agents are interconnected, interrelated, and interdependent (Pappas et al., 2017).

2. Complexity Theory

In science, Complexity Theory (henceforth CT) is mainly used for examining the phenomena which emerge from a collection of interacting objects (Johson, 2009). In this theory, these objects are named as agents that interact in a complex system characterized as dynamic, complex, nonlinear, chaotic, unpredictable, sensitive to initial conditions, open, self-organizing, feedback sensitive, and adaptive (Kasbi & Shirvan, 2017). The term of system here is broadly defined as a regularly interacting or interdependent group of items forming a unified whole (Franco, 2013). It might be simplified that a system is created or produced by a collection of interacting parts to form an integrated behavior.

As to dynamic system, it refers to the changes that occur in steps or stages, or continuously and unendingly (Larsen-Freeman & Cameron, 2008). Learning is dynamic. It engages a gradual process of interaction with teachers. Learners sometimes have to adapt to learning style in order meet their needs and preferences (Bhattacharyya & Shariff, 2014).

Another characteristic of complex systems is called nonlinearity. Nonlinearity highlights that the state of connections and interactions among elements and agents change over time in a way that is not proportional to input (Larsen-freeman, 2014). It can be said that the components in a complex system are not self-determining or independent, and at the same time, the relations among the component is not static. This character of complex system is contradictory to mechanistic linear systems in which interactions between elements and agents are constant (De & Franco, 2013). Further, it was said that complex systems as a condition in which complete randomness occurs that complex nonlinearity enters into irregularity and unpredictability (Larsen-freeman, 2014). What can be assumed is that there might be a kind of take and give among such systems with their immediate surroundings. For this condition, it is predictable that randomness will occur, but it is unpredictable to state when that moment will occur. The unpredictability in the behavior of complex systems is due to their sensitivity to initial conditions in which a minor can cause a large change in the system. This condition is than described as open because it is far from state of equilibrium (Baker, 2006; Johson, 2009). This means that they are in constant contact with the environment around them and can be directly influenced by it. To conclude, these systems
share energy or matter with their immediate surroundings. The next character complexity theory is called self-organizing systems. The appearance of these systems is organize themselves without external direction, manipulation, or control (De Wolf & Holvoet, 2005). This system copes with change and maintain its organization independently and therefore, the ability for this system to adapt is needed (De & Franco, 2013). The last characteristic of the complex system is adaptation which is the process by which a system adapts itself to the changes in its environment.

In the words of Davis and Sumara (2006), complex systems embody their histories - they learn - and are thus better described in terms of Darwinian evolution than Newtonian mechanics. Systems that work in this way are called ‘complex adaptive systems’ (Bachman, L. F., & Palmer, 2010). An example of a complex adaptive system is the school. As Larsen-Freeman and Cameron argue, the school is an open system, and may also be a non-equilibrium dissipative structure, in which the order or dynamic stability is the experiencing by learners of meaningful and life-affirming education (Larsen-freeman, 2014). This scenario includes certain components, including teachers, students, a curriculum, and a learning environment; additionally, external factors may influence these components and interactions. If an education system can adapt to the influences of changing external factors, it will maintain the dynamic stability and overall identity of effective learning. Furthermore, these systems can be considered adaptive in the sense that they actively try to turn whatever happens to their advantage (Ortega, 2017).

C. RESEARCH METHODOLOGY

This study adopts a qualitative case study methodology. It privileges an interpretive approach based on the Complexity Theory (henceforth CT). This is based on the attempt to reach better understandings of participants’ perspectives by being sensitive to what is being studied (Larsen-freeman, 2014). Besides, this approach also will enable the study to get higher degrees of reflection in analyzing the data (Baker, 2006). Two research instruments were used for collecting the data. The first is a questionnaire administered to examine students’ accessibility to the internet which is the main feature of the digital era (Obaidullah & Rahman, 2018). This instrument was used to collect the data about the digitability of the students selected for the study. The domains asked were about internet connection stability, frequency of accessing internet, and preferences when online. These three domains were also asked by Franco (2013) in assessing the digitalibity of the participants in his study. The second instrument is narrative frame. This choice is based on the idea that stories are told in a conscious fashion and offer subsidies for the researcher to understand someone’s experiences (Bell, 2002). Narrative frames are used to bring together different stories from different people in order to extract the commonalities in their stories (Swenson & Visgatis, 2011). Narrative frame instruments have been used to examine the experiences of teachers (Levis, 2014). The narrative frames used for the study was that resembles and used in the previous study by Swenson and Visgatis in investigating the commonalities of overseas students’ experiences (Swenson & Visgatis, 2011). In writing the narrative, participants formulate the narrative in a certain way, with a focus on the areas that the study is targeting for investigation. Data analysis is conducted by interpreting the commonalities identified in the narratives through the lens of Complexity Theory. Constructs of complex systems are used to describe the experiences of English students involved in the study. However, due to the space limitation, the excerpts of only five narratives are presented in the following section, for their descriptions of recurring events and perspectives shared in nearly all students’ narratives.
D. FINDINGS AND DISCUSSION

Before the results are specifically discussed, the following data were first gathered from a questionnaire to examine the digitability of 42 students to be selected participants concerning their digitability. There were three questions asked. The first is related to accessibility to the internet as illustrated by figure 1.

The blue area indicates the students stating that they have stable access to the internet. On the other sides, the read indicates the students whose access to the internet is not stable. Based on the figure, 81.4% of the students have a stable access, while there are only 18.6% students admitting that they do not have stable access.

The second question addresses the frequency the students access the internet as described by figure 2.

The figure illustrates that 90.7% of the students access the internet on daily bases, while there is only 9.3% who rarely access the internet.

The last question is regarding what the students do when they are online as described by figure 3.
The diagram clearly shows that almost all the students perform more than two different tasks when online. From this questionnaire, it can be concluded that the students mostly have been familiar with online experiences in their lives.

The following part reports and discusses the study’s results and discussions. Since the main point of the study is to provide a better understanding on students’ experiences in learning English in the digital age, key features of Complexity Theories (henceforth CT) are used to analyse the data. The narratives were written in Indonesian language but have been translated into English without changing their original meaning. The excerpts presented are accompanied by the unreal names of the participants.

Narrative’s excerpt 1

(...) I started for the first time my contact with the Internet when I did not understand very well my lecturer’s explanation of a particular subject... That what felt. This happened many times which then made me familiar with the Internet. I used to search on Google to enhance my understanding and sometimes to find out quickly what I wanted to know. Vocabulary is also another problem that I have. I frequently use my hand phone to search the meaning… Actually, I hate to learn if it wastes my time. It is bad to say that I frequently spent long enough in the class but I still have to study again outclass through the internet. (…) (Elga)

At first, this participant shows a negative attitude toward in-class learning. She found that what she had learnt from the class failed to meet her expectation which is described in CT as strange or chaotic attractors in the system. Based on Wolf and and Holvoet (2005), unsatisfactory pedagogical practices are seen as chaotic. Her statement “I started for the first time my contact with the Internet when I did not understand very well my lecturer’s explanation of a particular subject” means the interactions between the agents (student and lecturer) are influenced by an external factor which is unsatisfactory teaching. For this condition, the student tries to constantly immerse in technology to be easier for her to look for online alternatives to compensate for her unsuccessful learning experiences. The statement “I used to search on Google to enhance my understanding and sometimes to find out quickly what I wanted to know. Vocabulary is also another problem that I have. I frequently use my hand phone to search the meaning” clearly shows that the Internet is favourable for her, and at the same time, she may have tendency to be an autonomous learner and thus look for digital tools to enhance her learning.

Narrative’s excerpt 2

(...) Millennial like me should be able to use the internet to access everything. Lots of lecturers are not total in giving learning. So using the internet allows me to access things that I wanted ... Any things I want to know is easy to get. Sometimes, learning in campus is not productive, that is because lecturers often miss the class and learning milieu is low.... Moreover, I am the type of person who uses visual learning method. So, it is not enough if the teaching is carried out in form of audio only, so I need to study it again by searching for information on the internet for my understanding (…) Anton

The student clearly shows his frustration over the unsatisfying instruction on the campus. His statement “Millennial like me should be able to use the internet to access everything”
indicates an intentional effort to respond to his unsatisfactory condition. In other words, he manages to self-organize the chaotic condition in order to survive. The literature review shows that self-organization requires the evolution towards a certain attractor (Wolf & Holvoet, 2005). The unsatisfactory pedagogical practices reported by Anton represent chaotic attractors, and he has triggered a self-organizing behavior in his learning. What might be assumed further is that Anton has the potential to be an autonomous learner as he self-organized the chaotic situation he had accoutered. In other words, he managed to adapt to his situation in order to survive. This phenomenon affirms Franco, (2013) saying despite the teaching practices did not serve students’ needs, they were still able to seek alternative solutions and have a favorable attitude towards the English language.

Narrative’s excerpt 3

The site that I often use to learn from home is Youtube. Lots of videos that can be accessed for study materials while at home. (...) Through Youtube, I also watch videos in English to practice my listening skills, because the audio given by the lecturer it not be enough to fulfill my learning needs. (...) Then now I am training myself to watch videos in English without Indonesian or English subtitles ... I also use the Wattpad application to practice my ability to read English texts. Wattpad is an application used for writing and reading stories, such as fiction or non-fiction. Therefore I am actually more comfortable when reading Wattpad than reading scientific papers to improve my vocabulary ... (Eva)

Again, the narrative by Eva above seems much similar to the previous students’ narratives. In her opinion, her lecturer’s instruction had failed to accommodate her expectation. Her statement: “I am actually more comfortable of reading Wattpad than scientific papers to improve my vocabulary” signifies that she was not satisfied with her lecturer’s teaching using scientific papers in learning vocabulary. This chaotic situation then has triggered her to be in contact with learning sources and to develop an autonomous attitude by looking for other alternatives to improve vocabularies.

Narrative’s excerpt 4

(...) I use the internet a lot to find additional material related to the subjects I study. Sometimes, when I don't understand the lecturers' explanations or material from source books, I search through the internet ... Lots of content on the internet makes it easy for me to do my college work ... I watch English videos, and I like to learn about cultures of English speaking countries. ... (Ani)

Similarly, the student highlights in-class unsatisfactory teaching practices. But, in the lens of Complexity Theory, there is a minor shift identified which cause a change in the complex system. The statement “I watch English videos, and I also learn about cultures of English speaking countries” indicates that her interest in knowing English speaking countries allowed her to be in contact with English and to develop an autonomous attitude in learning. This phenomenon affirms David and Sumara (2006) saying that complex systems are also considered to be open systems, meaning that they are in constant contact with the environment around them and can be directly influenced by it. In other words, these systems exchange energy or matter with their immediate surroundings. From Ani, it also can be concluded that she missed the proper pedagogy aligned with her expectations and needs (Miccoli, 2007).
Narrative’s excerpt 5

(…) I actually hate an instruction when I found it difficult to understand. It was only until a new lecturer taught me how to study effectively and efficiently by the internet’s help. Since then, I could enjoy every lesson. (…) I always use the internet and have been so familiar with it. For me, now learning is fun. (…) (Bejo).

The statement above describes a change over time which is the shift in the student’s attitude towards the language learning. The word ‘hate’ clearly implies that the student has a negative attitude toward learning. However, his attitude toward learning changed, and he began to feel differently after he had met with a lecturer who taught him how to study effectively and efficiently by making use of the internet. In Complicity Theory, this phenomenon is the main feature that characterizes complex systems. The dynamic interaction of various elements of the system over time such that the results of these interactions are not entirely predictable or proportional (Harshbarger, 2007). In other words, there is a change from negative attitude toward learning to positive attitude toward leaning.

Based on a thorough investigation to all narratives in this research, a conclusion is made to address the questions stated earlier. The followings are the commonalities identified in all narrative frames of participants and the views of CT on the commonalities.

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<th>The Identified Commonalities Driving Students to Learn through Digital Network</th>
<th>View of CT on the Commonalities</th>
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<td>1. The statements: teacher’s insufficient skill in teaching, teacher frequently misses classes, boring teaching, book oriented teaching, lack of exercise, limited time to understand in class, not practical, too theoretical, wish for understanding better the subject learned, learning and playing games at the same time on Internet, wish for knowing other than lesson such as culture, to do projects and learn at the same time.</td>
<td>In the lens of CT, these practices are seen a chaotic that trigger the students to adapt and self-organize their learning in order to remain positive toward learning. Through the students are still able to compromise by self-organizing their learning.</td>
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<tr>
<td>2. The statements: wish for understanding better the subject learned, learning and playing games at the same time on Internet, wish for knowing other than lesson such as culture, to do project and learn at the same time are seen as shift in learner’s attitude towards learning. It is because that the existence of digital networked tool and devices has changed the students attitude toward learning into</td>
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positive and that they self-organize their learning.

From all the narratives, it can be concluded that students self-organize (self-organization) their learning. The appearance of certain chaotic attractors such as teacher’s insufficient skill in teaching, teacher frequently misses classes, boring teaching, and book oriented activities require the students to adapt and self-organize. This confirms Wolf and Holvoet (2005) saying self-organizing requires the evolution towards a certain attractor. The study clearly shows that the unsatisfactory teaching practices the students reported an example of attractors that leads to a way of learning, which is self-organizing behavior. Besides, the study also shows that self-organizing has the potential to inculcate autonomy in learning. The students are still able to deal with learning difficulty by making use of the Internet. Most of the students have similar opinion that a web-enhanced environment offers a wide range of learning opportunities and sources. Through this web-enhanced environment, teaching practices that do not align with their expectations and needs still can be solved.

E. CONCLUSION

The study has addressed the questions concerning students’ learning experiences in the digital age. The narrative excerpts presented here clearly depict how students learn in the digital age. An important phenomenon the study can highlight in relation to learning in the digital era based on the lens of CT is that learning is self-organizing. The students afford to self-organize their learning in order to survive by making adaptation and evolution in their learning. In this case, the evolution is made by searching learning possibilities offered by web-enhanced environment that surround the students. The study also has indicated that in-class teaching practices in the digital age do not align with students’ expectations and needs. In this case, there is a need for teachers to integrate their teaching material into web-based learning sources as well as provide the students the skill that can help to retrieve and develop information critically.

To end the remarks, the writer is fully aware that this findings are still far from ideal, in the sense that more participants are needed to make broad generalizations or to draw any conclusions about learning in the web-enhanced environment. However, the study has shown that the narratives presented herein are an honest exploration of learning phenomena in the digital age. The study, therefore, suggests that teachers should avoid the obsolete teaching practices by integrating the material taught into students’ digital-based learning experiences.

F. REFERENCES


