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Enhancing Autonomous Learning Reading Comprehension by Using Augmented Reality (AR) English as a Foreign Language in (EFL) classrooms

การใช้เทคโนโลยีการแสดงภาพเสมือนจริง และการเรียนรู้แบบพึ่งพาตนเองต่อการพัฒนาความเข้าใจทางด้านการอ่านภาษาอังกฤษสำหรับห้องเรียนภาษาอังกฤษในฐานะภาษาต่างประเทศ

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Abstract

In the English as a foreign language (EFL) classroom, students suffer from the difficulty of English language learning especially in reading comprehension in terms of various grammatical. Autonomous learning is the major factor that could help EFL students develop reading comprehension. To increase students' motivation, the environment has become an important part because students need to play a major character in English language classrooms. The technology could be the vehicle that supports the positive environment, especially in mobile devices because students could be able to access the online reading material anywhere which allows mobile-assisted English language learning to be applied in English reading learning. Although previous studies would clarify the application of Augmented Reality (AR) in reading

comprehension, AR in this article as a technology system would be analyzed to find the benefits of pedagogical reading comprehension in terms of autonomous learning. It is believed that autonomous learning might be an effective way for EFL students to develop reading comprehension along with the use of AR. Therefore, this academic paper aims to examine whether the development of AR can contribute to autonomous learning would be more clarified.

Keywords

Augmented Reality (AR), EFL, English language learning, autonomous learning, reading comprehension

บทคัดย่อ

ในห้องเรียนที่มีการสอนภาษาอังกฤษในฐานะภาษาต่างประเทศนั้น อาจจะมีนักเรียนที่ต้องเผชิญกับความยากลำบากที่จะเข้าใจการเรียนรู้ภาษาอังกฤษโดยเฉพาะทักษะการอ่านให้เข้าใจ (reading comprehension) เพราะในการที่จะเข้าใจเนื้อหาจากการอ่านนั้นนักเรียนจำเป็นที่จะต้องเข้าใจหลักไวยากรณ์ที่ถูกเขียนขึ้นในสื่อการเรียน ในการที่จะสร้างแรงดึงดูดให้นักเรียนเหล่านี้มีความสนใจต่อการพัฒนาทักษะการอ่านนั้น การเรียนรู้แบบพึ่งพาตนเองภาษาอังกฤษอาจจะเป็นปัจจัยสำคัญที่จะช่วยให้นักเรียนเหล่านี้พัฒนาทักษะการอ่านได้ เพื่อที่จะส่งเสริมให้นักเรียนมีแรงกระตุ้นต่อการเรียนรู้สิ่งแวดล้อมระหว่างการเรียนนั้นได้กลายเป็นปัจจัยสำคัญเนื่องจากนักเรียนที่เป็นผู้เรียนรู้จะต้องเป็นศูนย์กลางต่อการจัดการเรียนการสอน สิ่งแวดล้อมในห้องเรียนสามารถเป็นกุญแจสำคัญในการสร้างแรงกระตุ้นต่อการเรียนรู้โดยการนำเทคโนโลยีมาปรับใช้ในห้องเรียนภาษาอังกฤษได้ โดยเฉพาะการใช้อุปกรณ์อิเล็กทรอนิกส์เช่น โทรศัพท์ เช่น การนำเทคโนโลยีการแสดงภาพเสมือนจริงมาใช้สำหรับสื่อการอ่าน บทความนี้แสดงถึงคุณประโยชน์ของการปรับใช้เทคโนโลยีแสดงภาพเสมือนจริง (AR) ต่อสื่อการอ่าน รวมถึงการเรียนรู้แบบพึ่งพาตนเอง ที่เป็นปัจจัยส่งเสริมให้ผู้เรียนในห้องเรียนที่มีการใช้ภาษาอังกฤษในฐานะภาษาต่างประเทศสามารถพัฒนาทักษะการอ่านพร้อมกับการปรับใช้เทคโนโลยีการแสดงภาพเสมือนจริง บทความวิชาการฉบับนี้มีจุดมุ่งหมายที่จะศึกษาว่าการปรับใช้เทคโนโลยีการแสดงภาพเสมือนจริงนั้นสามารถกระตุ้นผู้เรียนสำหรับการเรียนรู้แบบพึ่งพาตนเองได้หรือไม่ ความรู้ที่ได้จากบทความฉบับนี้จะนำเสนอแนวทางต่อ

การปรับใช้เทคโนโลยีการแสดงภาพเสมือนจริงในห้องเรียนภาษาอังกฤษในฐานะภาษาต่างประเทศ

คำสำคัญ

เทคโนโลยีการแสดงภาพเสมือนจริง, ห้องเรียนภาษาอังกฤษในฐานะภาษาต่างประเทศ, การเรียนรู้ภาษาอังกฤษ, การเรียนรู้แบบพึ่งพาตนเอง, ทักษะการอ่านให้เข้าใจ

Introduction

Reading is one of the major English skills that has been taught to students in both schools and universities. Students are compelled to read the texts, interpret the reading information, and comprehend the major idea from what they read to present reading performance in the learning demonstration. In an English as a foreign language (EFL) classroom, students may normally encounter obstacles while they are learning about reading comprehension because they are required to understand words that include morpheme, phoneme, and grapheme and discern the sentences that include linguistic compositions, features, and prepositions (Graesser, 2007). Nurie (2017) pointed out that some EFL teachers might only focus on the success of reading. Hence, the development of reading comprehension might not be achieved by students.

Currently, technology has developed into a significant determinant for teachers to motivate students by supporting them to use technology and immerse themselves in English reading activities. Additionally, the number of students who own a computer has increased significantly (Piasecka, Adams-Tukiendorf, & Wilk, 2015). To enable students in EFL classrooms to perform in reading activities effectively, motivation may be one of the most crucial factors to build their positive thinking (Graesser, 2007). In this way, Augmented Reality (AR) which is one of the most advanced platforms of technological education might present the consequence of the development of technology, especially in applications used in mobile devices (Hamad, 2016). As suggested by Miri and Rahimi (2014), implementation with instructional innovative tools (e.g AR) can give students to engage their learning with the expansion of advanced innovation, mobile devices, and other technologies accessible for the contribution and establishment of educational content. Consequently, the motivation with instructional innovative tools might be the key for EFL students to practice to develop the reading comprehension by becoming autonomous learners.

This academic article analyzes current research and other theories on the use of AR in the development stage of reading comprehension. The objectives of this paper are to determine the

application of AR technology in EFL classrooms and review the benefits of AR in reading activities. Moreover, this article would involve the discussion of the benefits and feedback of AR development in reading comprehension and how it is applied in EFL classrooms which students need to use the technological tools to develop their understanding in the English reading context. Besides, autonomous learning contributed from the application of the technology would be presented in this article. This paper could be applied to discuss the advantages and disadvantages of using AR in EFL classrooms, and EFL instructors and schools can apply this paper as the model to start using technology to develop reading comprehensions for students.

English Language Learning in EFL context

The English language has been accepted as English as a foreign language or EFL in education and institutions (Ataizi, & Bozkurt, 2015). English has been one of the strong influential globalizations because it is used as an international language to connect communities and unify the world. For this reason, English has been presented and taught in academic institutions and studied by students as a foreign language (EFL) in various countries in the world. However, some problems generally occurred among EFL classrooms. The first problem of English language learning is there is the lack of atmosphere which could encourage students to be aware of a target language and motivation to study. Otherwise, English might be an effective tool for students to study outside the classroom (Akbari, 2015). Another problem that has been commonly observed is the use of textbooks in EFL classrooms. Some textbooks lack exercises that enable students to develop positive thinking in the skills that they were required to learn such as reading. Students were not supported to encounter the goal of English language learning (Akbari, 2015). Sinem (2011) explained that most EFL classrooms used the first language (L1) as the medium language and caused the limitation of English language learning because it was used as a foreign language. Besides, English should be applied in EFL students' daily routines because students need to participate in the real situations in which various English vocabularies were required to be delivered (Harmer, 2007, as cited in Chang, Chen, &

Liao, 2020). Instructions were expected to create an environment that influences students to practice learning English as the tool in the classroom and students were expected to attach vocabulary with real-life situations by administering English learning in real life. To reinforce students to immerse themselves in the learning environment, media and technology should be applied as a schema in the framework that supports the real situations and express the feeling and specific story, activities involving real-life situations, and use innovative tools to support the schema in English language learning such as vocabulary, song, role play, and communication. Hence, in this time of technologies and innovations, the unique personalities of learners, learning atmosphere, and learners' desires varied and advanced instructional approaches or learning processes have appeared as the result of technological developments (Ataizi, & Bozkurt, 2015).

Reading comprehension

Reading comprehension is one of the grammatical skills which relate to the analysis of written monologue. This skill also involves complicated activities which represent diverse discourses (Fayol, 2004). Moreover, it is the skill that developed from another aspiration such as spoken comprehension to a current form of text. To develop reading comprehension, reading strategies have been used by lots of readers and recommended by experts in reading.

Reading strategies

Reading strategies are essential because it involves the support of students or readers to develop reading comprehension and to build up the competency of reading (Suebpeng, 2017). The word 'strategy' is connected to the effort by learners to develop their reading comprehension (Anderson, 2000). Reading strategies could be monitored by instructors by observing the notes with the information written by students while they are listening to the class (Anderson, 2000). On the other hand, reading strategies refer to the understanding progress that readers apply to comprehend the information that they read.

Application of Technology in Reading Comprehension

Nowadays, technology has presented the power to benefit reading comprehension development for students (Cummins, Brown, & Sayers, 2007). It is crucial to delve into the usage of tools to bolster language construction and the learning progress. Additionally, technology allows students to expand their perception of the various topics and encourage students to collaborate in reading comprehension activities with productivity (Beach & Caste, 2014). To apply the technology in reading comprehension, mobile devices could be used as an intermediary to access the Augmented Technology (AR) to present in reading comprehension activities.

Mobile-Assisted English Language Learning reading comprehension

Mobile-assisted English Language Learning involves the adoption of technologies through mobile devices in the English language learning environment (Miangah, & Nezarat, 2012). The expanding advancement of technology has built new circumstances to develop the feature of education in many ways such as in English language learning. Mobile phones have proposed current models of English language learning because it has been included in the use of education and become the transmission medium of communication. Mobile phones support lots of services for global communication such as online applications, the internet, or online communication platform. The adoption of mobile phones and devices and online communication has led to the specific field which represents the adoption of mobile phones and devices in the way to support education. This is called 'mobile learning' or 'M-learning'. Moreover, the development of mobile learning has reached the way that learners can learn anytime and anywhere Song, 2008, as cited in (Ahmadpour, & Yousefi, 2016). On the other hand, m-learning could enable learners to study English as long as they want which allows 'Mobile Assisted English Language Learning' to perform in education. For EFL students, reading has played a compelling role in learning English as a foreign language (Daud, & Husin, 2012). Reading has been limited with effective English language learning among EFL students because most reading activities might occur in the classrooms in which papers or books are used as the main

material. Nevertheless, papers and books might not be conveniently used outside the classroom. According to the development of technology, students are more likely to use reading material from online platforms to achieve the purposes of learning set by themselves. Developing reading comprehension with mobile devices influences students to change the environment positively and build more interest because students could read online materials anywhere (Daud, & Husin, 2012). All in all, mobile devices could enhance students to develop reading comprehension because students could choose the types or level of reading by themselves and online materials could be chosen from various categories on the internet which support students to build positive thinking in English language learning. To introduce the model of online learning which enables students to develop reading comprehension, Augmented Reality (AR) could be presented as the model of English language learning tool.

Augmented Reality (AR)

Augmented reality or AR is an innovative concept that gains extensive attention from various fields such as science, entertainment, business, or education. The origin of AR has begun in 1968 when Ivan Sutherland designed the first AR operation which applied a visual that can be viewed with the display. In 1975, Myron Krueger decided to build an AR that supports users to interact with virtual items. Certainly, David Mizell and Loin Caudell created the software which develops the manufacturing that introduces cables in the creation process (Kipper & Rampolla, 2013). According to Koch (2016, p. 124), AR is introduced as a "picture of physical objects or actual environment which features are augmented by the production of computer audiovisual input as voice, video, or visual picture. Augmented Reality (AR) is distinctive from Virtual Reality (VR) in terms of the display of objects. AP presents actual objects customized by mobile devices, computers, and matters such as pictures, video, or voice but, VR presents real objects which are built and imitated to let users immerse themselves in the real setting (Koch, 2016). Augmented Reality (AR) is the operation analyzed by three characteristics which are presenting actual and virtual objects, registration of 3D pictures, and performing in real-time.

Moreover, Kipper and Rampolla (2013) explain that Augmented Reality (AR) is not just the development of technology but, is also referred to as the creative interpretation for various industries to enhance the quality of future advancement.

Augmented Reality (AR) has appeared for a few years in English language learning. AR systems provide students opportunities to build up new abilities through the use of AR objects (Alsawat, 2016). Boettcher (2007) states that "the more influential and active educational experience, the more students will immerse themselves in the learning progress". There have been some positive effects of AR applications in English language learning. For example, there was an investigation of the effect of online dictionary application in thirty-four learners who were in the lower-intermediate level of English language learning. All learners were required to engage in pre-test and post-test. The consequence showed that AR facilitated learners to develop the sensory of English vocabularies in the post-test after investigators presented AR systems through mobile devices (Miri, & Rahimi, 2014). Besides, Cakir and Solak (2015) diagnosed the impact of materials composed with AR on English vocabulary learning. About one hundred students of a university in Turkey engaged in the study. The consequence of the study instructed that materials composed with AR technology increased students' motivation to study English vocabulary. Baldiris, Fabregat, and Munoz (2017) also analyzed the study which attracted the conditions of reading comprehension in which AR was assimilated as the 3D book to enhance students' learning performance. Fifty students who were in grade six collaborated in this activity and used tablets which included reading questions after seeing diverse scenes in the 3D book which the application of AR demonstrated the visual image to present stories in the book. According to the result of this study, students were identified as obtaining more satisfaction compared to reading a book.

However, there are some limitations of AR technology in English language learning. AR might be obtrusive technology. AR could be applied as the authority of obtrusiveness for students when they use the head-mounted displays (HDM). Jamrus and Razali (2019) declared that devices that were used to transmit information from AR could disturb the natural obligation between students and other classmates and instructors' interactions. Moreover, classrooms need to be fully prepared with hardware and durable internet or network connection.

Classroom Engagement of Reading Comprehension

How EFL students engage in reading comprehension (traditional approach [teacher center])

The traditional teaching approach is defined as the teacher-centered approach which plays the main role to deliver information to students. Lectures were commonly taught by instructors presenting skills accepting a blackboard and verbal interpretation in classrooms. Moreover, instructors need to play a role as an organizer of classroom activities in which they were required to provide explanations and specific knowledge (Saeheng, 2017). Wong and Fong (2014) indicated that the traditional approach has been viewed as a constraint of students' reactions. The constraint affected an individual student's reaction to instructors, a slowed evaluation that was provided to students, and restraint of teaching equipment in classrooms. The issue of the traditional approach is instructors are required to act as the center of a classroom and observe the students' performance in the overall picture. Thus, some students might face difficulties in lectures without the care of instructors (Lui, & Long, 2014). To illustrate the advantages and disadvantages of the traditional teaching approach, almost all information in classrooms is written on the blackboard and erased after the class. Students need to remember the important information rather than try to understand the information. The reason why students in traditional classrooms tend to remember the information is to pass the exam which is the major and important assessment (Saeheng, 2017). In addition, the traditional approach also creates boredom in classrooms because of the small scope and powerless tools in teaching. Selinger (2008)

also consents that there is a limitation in the traditional approach in terms of instructors' classroom management and reduction of students' motivation because students are asked to answer more than understand the information. However, traditional classrooms might be seen as an important part of some subjects such as science, or mathematics because some steps of information are needed to be written on the blackboard (Boumava, 2008).

How EFL students engage in reading comprehension (technology based)

According to the development of teaching and learning, various types of technology have been applied and used for education purposes. Technology can be used to develop reading comprehension because technology introduces the function that gives students the background information of texts. Moreover, the meaning of English vocabulary is also found from technologies such as on the internet or online dictionaries. Furthermore, when technology is applied in a classroom, students would be able to work together to reach the objective of learning which causes collaborative learning (Helmers, 2017).

To illustrate the student's engagement in reading comprehension, the selected technology system 'AR' would be supported as evidence. There was an investigation to observe the English training of children by using AR. Children were able to access the reading material by using a mobile phone. The result showed that children could build more interest and positive attitudes toward reading material and the application of AR (Ghasemi, & Javidan, 2014). Moreover, there was another investigation in which 122 students who were in fifth grade participated. The result showed that students were happy with studying with the use of AR system because they could reduce their anxiety and they wanted technology could be applied in the courses in the future too (Kuçuk, Yilmaz, & Goktas, 2014).

21st century classroom impulse students to become autonomous learners. (Children center)

The autonomous learner is referred to as "learners who could control their learning performance and evaluation" (Benson, 2011). Autonomous learning is associated with the learning styles that each individual student prefers to choose, studying outside the classroom, and managing the possibilities to observe the personal feedback (Jooneghani, & Masouleh, 2012). The technology could be the essential element to develop students' personal autonomous learning by providing the target knowledge and specific skills (Reinders & Hubbard, 2013 as cited in Hamad, 2014). Autonomy is evolved by the development of an environment which encourages students to build motivation and positive thinking in learning to participate in challenges (Ushioda, 2007). There was one investigation that supports the benefit of AR systems in autonomous learning. The investigation selected students who participated in the second language (L2) gaming. The result showed that students would be able to develop autonomous learning by applying AR to learn English vocabulary and set their goal of L2 learning (Chik, 2014).

Conclusion and discussion

This research presents the application of Augmented Reality (AR) systems and the benefit of Augmented Reality (AR) systems in reading comprehension development. EFL students generally participate in English language learning classrooms in which students' first language (L1) was used as the major language in delivery (Sinem, 2011). When the environment could not support EFL students to develop English language learning, students might lose motivation in learning because motivation is the important factor to participate in autonomous learning which is effective to study the second language (L2). One of the important English skills is reading comprehension which is difficult for students to overcome all the obstacles such as the construction of text, or the lexical meaning of complicated grammatical features (Graesser, 2007) In order to support EFL students, technology might be the effective and influential tool to be applied in classrooms to support students to develop reading comprehension. Technology provides the access

of digital information and online learning which enable students to immerse themselves in online learning anywhere and anytime (Goh, & Kinshuk, 2006, as cited in Daud, & Husin, 2012). One of the significant tools of online learning is mobile learning because students can search for the online reading material and determine the level of difficulty by themselves. In order to enable students to participate in 21st century classrooms, the application of technology might be the potential way for students to develop reading comprehension. Augmented Reality or AR has been applied in many classrooms in order to investigate the development of reading comprehension among EFL students. The result showed that EFL students could be able to develop reading comprehension by completing the tasks because they could gain more positive thinking and motivation because of the AR system. Students could be able to learn and use English vocabulary with low anxiety. When EFL students could gain more motivation in English language learning, they could be able to design the learning styles and determine their individual goal of learning because they have a mobile phone which is the source of learning in their hands. This also helps students to become autonomous learners which they are able to study and develop reading comprehension outside the classroom. However, there are still limitations of AR in terms of intrusive systems and effective internet connection in classrooms. Moreover, some students might lack digital tools to access teaching materials connected with AR. If there is a lack of digital tools, self-autonomous learning might not be developed among individual students. All in all, Augmented Reality (AR) could be applied as the model of EFL classrooms to enable students to gain self-autonomous learning in English language learning and become autonomous learners. However, it should be studied more in the future.

References

Ahmadpour, L., & Yousefi, M. H. (2016). The Role of Mobile-assisted Language Learning on EFL Learners' Development of Writing Accuracy, Fluency, and Complexity. *Journal of Modern Research in English Language Studies*, *3*(4), 105-118.

Akbari, Z. (2015). *Current challenges in teaching/learning English for EFL learners: The case of junior high school and high school.* An International Conference on Teaching and Learning English as an Additional Language, Antalya – Turkey.

Alsawat, H. (2016). Breaking down the Classroom Walls: Augmented Reality Effect on EFL Reading Comprehension, Self-Efficacy, Autonomy, and Attitudes. *Journal of Studies in English Language Teaching*, *5*(1). doi:10.22158/selt.v5n1p1.

Anderson, J. C. (2000). *Accessing Reading*. Cambridge: Cambridge University Publisher.

Ataizi, M., & Bozkurt, A. (2015). English 2.0: Learning and Acquisition of English in the Networked Globe with the Connectivist Approach. *Contemporary Educational Technology*, *6*(2), 155-168.

Baldiris, S., Fabregat, R., & Munoz, H.T. (2017). Augmented Reality Game-based learning: Enriching Students' Experience During Reading Comprehension Activities. *Journal of Educational Computing Research*, *55*(7), 901-936. https://doi.org/10.1177/0735633116689789

Benson, P. (2011). *Teaching and Researching: Autonomy in Language Learning*. London: Routledge Publisher.

Boettcher, J. V. (2007). Ten Core Principles for Designing Effective Learning Environments: Insights from Brain Research and Pedagogical Theory. *Innovate Journal of Online Education*, *3*(3). https://nsuworks.nova.edu/innovate/vol3/iss3/2

Boumova, V. (2008). *Traditional vs. Modern Teaching Methods: Advantages and Disadvantages of Each.* Masaryk University: The Czech Republic.

Cakir, R., & Solak, E. (2015). Exploring the effect of materials designed with augmented reality on language learners' vocabulary learning. *The Journal of Educators Online, 13*(2), 50-72. https://dx.doi.org/10.9743/jeo.2015.2.5

Chang, Y. S., Chen, C. N., & Liao, C. L. (2020). Enhancing English Learning Performance through a Simulation Classroom for EFL Students Using Augmented Reality - A Junior High School Case Study. *Journal of applied science, 10*(21). https://doi.org/10.3390/app10217854.

Chik, A. (2014). Digital gaming and language learning: Autonomy and community. *Language Learning & Technology, 18*(2), 85-100. http://llt.msu.edu/issues/june2014/chik.pdf.

Cummins, J., Brown, K., & Sayers, D. (2007). *Literacy, technology, and diversity: Teaching for success in changing times.* Boston, MA: Allyn and Bacon Publisher.

Daud, N. M., & Husin, Z. (2012). *Reading Skills Development: Mobile Technology to Support Learning.* Marrakech 1st International ICT Conference: Opportunities, Challenges, and Practical Solutions for the Integration of ICT in Education. Morrocco: Marrakech.

Fayol, M. (2004). Text and Cognition. In T. Nunes & P. Bryant (Eds.), *Handbook of Children's Literacy* (pp. 81-197). Dordrecht, Netherlands: Kluwer Academic Publishers.

Ghasemi, A., & Javidan, R. (2014). A New Model as English Tutorial Assistant based on Augmented Reality. *Journal of Educational and Management Studies, 4*(3), 695-701. https://jems.science-line.com/attachments/article/26/J.%20Educ.%20Manage.%20Stud.,%204(3)%20695-701,%202014.pdf

Graesser, A. C. (2007). An introduction to strategic reading comprehension. In D. S. McNamara (Ed.), *Reading comprehension strategies: Theories, interventions, and technologies* (pp. 3–26). New York, NY: Lawrence Erlbaum Associates.

Helmers, J. R. (2017). *Using technology and collaboration to support reading comprehension* (Master's thesis, Northwestern College, Orange City, IA). Retrieved from http://nwcommons.nwciowa.edu/education_masters/38/

Jamrus, M. H. M., & Razali, A. B. (2019). Augmented Reality in Teaching and Learning English Reading: Realities, Possibilities, and Limitations. *International Journal of Academic Research in Progressive Education and Development, 8*(4), 724–737. doi:10.6007/IJARPED/v8-i4/6696

Jooneghani, R. B., & Masouleh, N. S. (2012). *Autonomous learning: A teacher-less learning.* International Conference on new horizons in education INTE2012. Penang, Malaysia.

Kipper, G., & Rampolla, J. (2013). *Augmented Reality: An Emerging Technologies Guide to AR.* Waltham, MA: Syngress.

Koch, J. (2016). *TEACH3: Introduction to Education.* Los Angeles, CA: SAGE.

Kuçuk, S., Yilmaz, R. M., & Goktaş, Y. (2014). Augmented Reality for Learning English: Achievement, Attitude and Cognitive Load Levels of Students. *Education and Science, 39*(176), 393-404. https://dx.doi.org/10.15390/eb.2014.3595

Lui, C., & Long, F. (2014). *The discussion of traditional teaching and multimedia teaching approach in college English teaching.* International Conference on Management, Education and Social Science. https://doi.org/10.2991/icmess-14.2014.9

Miangah, T. M., & Nezarat, A. (2012). Mobile-Assisted Language Learning. *International Journal of Distributed and Parallel Systems (IJDPS), 3*(1). doi:10.5121/IJDPS.2012.3126.

Miri, S., & Rahimi, M. (2014). *The Impact of Mobile Dictionary Use on Language Learning.* International Conference on Current Trends in ELT, 1469 – 1474. Iran.

Piasecka, L., Adams-Tukiendorf, M., & Wilk, P. (2015). *New Media and Perennial Problems in Foreign Language Learning and Teaching*. Switzerland: Springer International Publishing.

Saeheng, P. (2017). A study of e-learning, blended learning, and traditional teaching method to enhance English reading comprehension ability and motivate the autonomous learning of Thai learners. *Indonesian Journal of English Language Teaching and Applied Linguistics, 2*(1), 1-20 Retrieved from https://shorturl.asia/ziL2N

Selinger, M. (2001). Learning Information and Communications Technology Skills and the Subject Context of the Learning. *Journal of Information Technology for Teacher Education, 10*, 143-154. http://dx.doi.org/10.1080/14759390100200108

Sinem, Z. (2011). EFL in Higher Education: Designing a Flexible Content-Based Curriculum at University-Level. *ASEAN EFL Journal, 13*(1), 85-113.

Suebpeng, K. (2017). *Students' use of reading strategies: a survey study of grade 9 EFL students at Nonkhor school* (Master's thesis). Retrieved from https://www.oar.ubu.ac.th/old/images/docs/techno/paper/4.kokiat.pdf

Wong, L., & Fong, M. (2014). Student Attitudes to Traditional and Online Methods of Delivery. *Journal of Information Technology Education: Research, 13*, 1-13. http://www.jite.org/documents/Vol13/JITEv13ResearchP001-013Wong0515.pdf

Ushioda, E. (2007). Motivation, autonomy and sociocultural theory. In Benson, P. (Ed.), *Learner autonomy 8: Teacher and learner perspectives* (pp. 5-24).

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