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## A Review of Ubiquitous Language Learning Environment

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### ABSTRACT

In today's era of ubiquitous learning research, various studies have investigated the transformation of ubiquitous learning in multiple aspects. However, most of these research mainly focus on the study of ubiquitous learning environment. Limited review is on the configuration and components of ubiquitous learning focusing on the interaction process in language learning. Hence, this research performed literature analysis for ubiquitous language learning environment whereby it intends at providing specific information about ubiquitous learning concepts and the criteria that needed in the future research focusing on language learning. It begins by briefly describing the concept of ubiquitous learning environment, language learning skills and the importance of vocabulary learning and then on adult language learning. Finally, ubiquitous learning applications for multiple types of language learning are also compared and discussed to further enhance the understanding of ubiquitous language learning environment. Therefore, it is important to have a medium that can be used to improve language learning process to be more interactive. The result will also become a reference point to assist development of ubiquitous language learning applications.

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## 1. INTRODUCTION

Language can be considered as a delivery method in expressing emotions in the form of voice and signs. There are many languages spoken in this world. The first language learned is known as our mother tongue. It is the first language that we heard since our borne. Any language that been acquired or learned after the first language established is known as second language learning meanwhile foreign language learning is learning a language that is usually not spoken in the community. Despite the rapid changes in information technology can effectively support language learning in a ubiquitous learning environment, appropriate interaction and communication approaches with technology support can further enhance learning performance of the learners. In language learning process, there are four main skills that will expose by the learners such as listening, reading, writing and speaking. All of the skills collaborate with each other in language learning in order to generate the final output. Interaction is the key elements to success in language learning skills [1]. However, the lack of the interaction elements is a main constrain in language learning whereby the educators and learners can meet with difficulties in determining appropriate learning materials that they needed in their teaching and learning process [2].

In relation, the recent advancement in wireless technologies and sensors network has led to new learning paradigm which is known as ubiquitous learning, thus allowing the learners to be in an interactive environment that is useful for language learning. Moreover, in this digital world, language learning is seems as a social process that relies on collaboration within the community and process of learning happens around

the dynamic contexts whereby learners acquire knowledge and skills without any restrictions. Hence, with the rapid changes in learning environment, the process of language learning becomes easier. This is happening when the ubiquitous learning environment allows the process of language learning to happen efficiently and effectively by providing interactive environment that needed by the educators and learners [3]. Nevertheless, this ubiquitous learning environment is difficult to implement without having a proper interaction elements to obtain learning information and as a consequences this new learning environment might become difficult to educators and learners [4]. In addition, research and speculation in ubiquitous learning environment have been arising in the academic sectors which have important effect on learning [5]. Research has indicated that process of learning is not occurs independently but occur in the flow and interaction between educators and learners and its environment [6-7]. Although extensive research has been carried out on ubiquitous learning that can support language learning, it still lacks of the technological support for the interaction that needed by the language learners. Therefore, the research is carried out to explore the benefit of ubiquitous learning environment that focusing on language learning.

## 2. LITERATURE BACKGROUND

### 2.1. Evolution of Ubiquitous Learning

The revolution of technology has lead to convergence of handheld devices to gradually become individual knowledge sources. Inevitably, ubiquitous learning has become an important learning channel that would fit the living style of today's learners. The landscape of the learning environment has become blurry with the fusion of technology. Recent developments in mobile and ubiquitous technologies provide new learning environments for learning, which goes far beyond the traditional learning paradigms such as classroom teaching. In recent years, the concepts of ubiquitous learning have been discussed in many literatures but there is no exactly terms that represent ubiquitous learning that being accepted regarding the transformation in academic learning paradigms that changed so fast [8]. There have previous work from academic scholars to identify the main concepts of ubiquitous learning environment [9-10]. The most accepted definition for ubiquitous learning that been known is "anytime and anywhere". The definition is represent a learning environment that allows the learners to access the knowledge content using mobile devices through wireless or internet connection in anytime and anywhere. However, it is still a broader definition for ubiquitous learning whereby the definition almost similar with mobile learning environment that also convey the same meaning which learner can access knowledge content anywhere and anytime via wireless communication technologies [11]. The summary that can be made is many researchers have different views in defining the definition of ubiquitous learning. Therefore, the ubiquitous learning definition needs to be identified and clarified before applying the terms into the research to avoid any misconception. A more focus definition of ubiquitous learning should focus on utilization of ubiquitous computing technologies into the learning environment which emphasizes the use of sensor technology. In the following discussion the definition of ubiquitous learning will focus on "learning that happens in anytime and anywhere in a right way with a right content using ubiquitous computing technology" [12].

The ubiquitous learning environment is an integrated environment that involved all kinds of resources that consist of physical, virtual, personal space and public space. Technology is the medium that ubiquitous learning depended on. Using the ubiquitous learning environment, anyone that consists of learners, educators, and institutions will have more efficient and effective medium of technology in the new learning environment. This new environment is expected to be aware of the presence of the users and to perceive learning material that needed by them and in responsive manner towards those needs [13]. Furthermore, ubiquitous learning environment becomes important in education whereby information that can be assessed anywhere have been a compulsory in the education environment. Although ubiquitous learning is a new learning environment that attracts the academic scholars, the characteristic of ubiquitous learning remains unclear [14]. Our previous work has identified the comprehensive characteristic of ubiquitous learning paradigm. Further explanations of ubiquitous learning paradigm characteristics can be found in [12]. The characteristics are:

1. Accessibility: Learners can access the system in various ways.
2. Adaptability: Learners learn at the right way with a right content in a right place.
3. Context Awareness: By accessing the database, the system can sense the learner location, personal and situation using ubiquitous computing technology.
4. Immediacy: Learners can get the information immediately when they want it.
5. Interactivity: Learners can interact with educators in virtual and physical environment settings.
6. Permanency: Learners can never lose their work unless it is being deleted.

## 2.2. Language Learning

Language is dynamic and a unique process to learn. It consists of sound systems and has words meanings to express emotions, feelings or communication between people in a several components. There are three main components of language which are form that include phonology (sound system), morphology (grammar) and syntax (sentences), content that include semantics (vocabulary) and use that include pragmatics (communication). Within each component, language skills can be differentiate by two types which are receptive that include comprehension of the spoken words and productive that include production of the spoken words. In addition, language learning and language acquisition is the different terms that always misunderstood as the same things [15]. Language learning is formal language learning in the schools meanwhile language acquisition can be happened at anywhere in informal situation. On the other hand, language learning is not communicative whereby the learners learn the rules of the languages. However, knowing grammar rules is not necessarily important requirements in speaking fluently or good in writing aspects. In language learning process, there are four main skills that will expose by the learners such as listening, reading, writing and speaking (refer Figure 1). Listening and reading are known as receptive skills meanwhile speaking and writing are known as productive skills. Receptive skills is the first skills including of learning grammar, vocabulary, repeated sounds of a foreign language following by productive skills which is the second skills known as an output of language learning either in writing or speaking part [16].

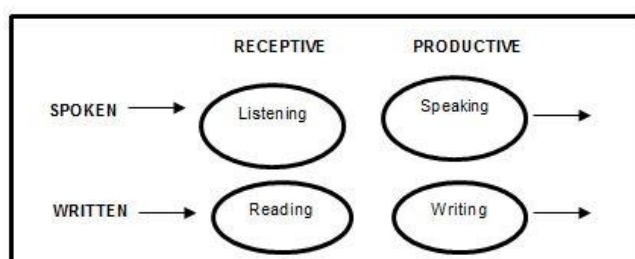


Figure 1. Four Skills in Language Learning

Listening is receptive skills which the learners need to understand the language that they hear. It is a skill that widely used in terms of communication in our daily life. It is clearly stated that the better the learners understand the language that been spoken, it will increase the ability of the learners to communicate in their target language. In listening skills, the problems that always appear is that the learners having difficulties to improve their skills because they are not exposed to their target language outside their learning environment [17]. In fact, listening skills is one of neglected skills among the educators whereby they give more attention to reading skills that consists of grammar and vocabulary [18]. However, listening skills is an active skills that cannot be neglected by the educators whereby it is an intentional process that is important for the learners in order to increase their ability in their target language learning and without understanding the proper receptive skills in the first step, any target language learning cannot begin right. The better ways to improve the learners listening skills is by practicing the language and it needs a motivation and continuously effort from themselves to keep repeating their target language learning.

Speaking is productive skills that are considered as most difficult skills that need to learn by the learners. Speaking skills means to converse, expressing feelings or thoughts in spoken target language. Speaking skills is collaborate with listening skills whereby in order to speak a language, the learners need to understand and knowing the target language before they can communicate better [19]. In doing so, the learners need to learn listening skills before improving their speaking skills. In addition, speaking skills is most challenging skills because learners always have problems in terms of the use of slang and idioms, rhythms, intonation and they are not been prepared for spontaneous communication and always failed in their attempt to speak and communicate better in their learning. In this skills, learners do not have a space to do a mistake, unlike the other skills, they need to be well prepared because the spoken words cannot be replaced or re-speak. In order to improve the speaking skills, the learners need to often practice the target language and build their confidence in standing in front of the audience, that is why language learning process is dynamic and different from the other learning because it is highly demand of leaners high motivation in order to success in their language learning.

Reading is a basic skill of instruction in all aspects of language learning for the language learner and it is a receptive skill in written formats. Krashen [20] described that the way to improve reading is by continuously repeating reading. The reading processes include fluency of reading, vocabulary acquisition,

grammar, writing and the culture of the learners in learning second or foreign language. Reading fluency can be identified as read the texts faster with the learners have a good comprehension and be able to adjust the reading rate for their purpose of reading. In addition, reading fluency is not described as oral reading because learners capable in reading the texts aloud without comprehend it at all. In fact, fluency in silent reading helps the learners to improve their comprehension by read the text and it is depending on their vocabulary knowledge. The more efforts to read, the more vocabulary knowledge will increase and the more better they can read and comprehend the text. Continuously repeating reading, reading fluency with comprehension skills and vocabulary knowledge is the interrelated components that connected with each other for development of second and foreign language reading. On the other hand, second or foreign language learning with culture of the learners cannot be separated [21]. Language knowledge of every learner is different according to their native language and it is also leads to different thinking patterns that are constructed with their cultural settings. For example, the learner that consists from two different cultural backgrounds such as Korea and Japan have a lower difficulties to read the Chinese characters and have almost similar comprehension skills than those of learners that from countries that using alphabetic language. Moreover, second or foreign language learning needs different strategies of reading skills depending on the native language of the learners.

Writing skills is productive skills in terms of written forms that required continuously effort and much practice in composing, developing, and analyzing ideas and it is among skills that difficult to learn. Learners in second or foreign language learning always encountered the same problems in writing skills whereby they do not have an ideas to extend their essay instead of having a problems in identified the suitable vocabulary use [22]. The ability of writing well is gained through repeating practices in formal educational environments. In doing so, the learners should be able to have good writing skills in determining the vocabulary use and have rich ideas to convey information through the appropriate writing style. The level of writing skills of the learners will affect their achievement in language learning examination. In language learning, the learners competency in the target language will be considered through their highly skills in composing appropriate essay that have suitable vocabulary used [23].

### **2.3. Vocabulary Learning**

Vocabulary is a list of words that learners need to learn in order to communicate effectively and it is divided to two main components which are receptive vocabulary that include listening skill and expressive vocabulary that include speaking skills [24]. Receptive vocabulary is words that learners understand and identified in a context form through reading skills and rarely used in speaking or writing skills. Expressive vocabulary is an active process in determining appropriate words that learners use and can pronounce better in speaking and writing skills. It is also collaborate with receptive skills whereby learners can produce words that they need in expressing their feelings or thoughts. On the other hand, the acquisition of vocabulary plays important roles in the development of spoken and written skills. In second or foreign language learning, learning vocabulary knowledge play main roles in all language skills that include listening, speaking reading and writing [25]. Many researchers argued that vocabulary is one of the most important components in learning second or foreign language whereby it is the requirements that learners need to learn in conveying their message or meaning of their target language learning. Large vocabulary knowledge is an essential component for the learners in mastering their language. Moreover, vocabulary does not have rules that learners may follow in acquiring or developing their knowledge. Oxford & Crookall [26] also claimed that vocabulary is the unmanageable components that difficult to learn because it is have thousands of different meanings that need to learn by every language learner in learning any languages. Despite the difficulties that need to face by the learners, they need to deal with it in order to success in mastering their target languages. Learning language is difficult because each component connected to each other and learners need to improve their ability in all components in order to be success in their target language learning. Thus, technology is very important to support vocabulary learning that is important component for all four skills in language learning process.

### **2.4. Adult Language Learner**

Adult language learners that in higher institutions are different from young language learners that enrolled in primary and secondary schools which these groups having different characteristics in language learning. Adult language learners are self-directed learners that having their own goal in order to fulfil their particular need and compared with young language learners; the adult language learners have more intention to use language learning strategies. Reference [27] identified several variables of adult language learners in language learning strategies such as gender, motivation, beliefs and theories, cultural field, age and language level, tolerance and ambiguity and risk and types of learning paper work. Adult language learners are able to discuss their learning style better than young language learner [28]. Past research indicate that adult language

learners have greater cognitive and linguistic capabilities and dealing complexity than young language learners. In order to success in language learning, adult language learners need supportive environment that collaborate them in efficient ways. Thus, we need to allow learners to be in an interactive and effective environment that is useful for language learning.

## 2.5. Ubiquitous Learning Applications for Language Learning

Ubiquitous learning supported multiple language learning in higher institutions today's. It is proved by the existing of several ubiquitous language learning application that is been proposed by the several researchers. The analysis of the previous research in ubiquitous learning for language learning is given in Table 1. The important aspect of the ubiquitous language learning is the knowledge content can be assessed in anytime, anywhere and using any device. In English language learning, a personalised context-aware ubiquitous learning system (PCULS) for learning English vocabulary has been developed in a school environment based on learner location as detected by wireless positioning techniques, learning time, individual English vocabulary abilities and leisure time, enabling learners to adapt their learning content to effectively support English vocabulary learning [29]. The experimental results shows that over 92% employment of wireless positioning scheme is sufficient to detect the learner's locations and it is effectively support situational English vocabulary learning. It is proved that ubiquitous learning can be a platform to learn language learning efficiently and effectively.

Ubiquitous learning can be classified as a new platform of learning environment that using ubiquitous technology. A new system named as Ubiquitous English Vocabulary Learning (UEVL) was developed whereby the main function of the system is actually to assist learners in experiencing a systematic English vocabulary learning process in which ubiquitous technology is used to develop the system, and video clips are used as the material [30]. The experimental results indicate that the system characteristics and the material characteristics of the UEVL system positively and significantly influence the perspectives of all 55 target learners on the system. It is clearly stated that ubiquitous learning is supported by ubiquitous computing, where evolution has recently been accelerated by open networks, and by the improvement of wireless telecommunications capabilities.

Another language learning that can be identified as a target language in ubiquitous learning system is Chinese language learning. Chinese language learning is among complicated languages to learn. The Chinese language learning needs to interact with others or otherwise the learners will get a low achievement. In order to get effective and efficient Chinese language learning, a system based on ubiquitous learning that use context awareness, a learning system that's known as elementary Chinese language learning system is being developed [31]. In this system, the learners and educators can interact efficiently and effectively in order to move towards a new learning paradigm. On the other hand, Japanese language also can be identified as one of the complicated languages to learn. However, several researchers have explored a research towards ubiquitous learning usage in Japanese language learning [32]. Based on ubiquitous context awareness learning environment, a PDA system was design to support the foreigner learning Japanese Polite Expressions (JPE) in anytime and anywhere [33]. The system was successfully providing a new learning environment in Japanese expression and it effectively helps the learner. It is been proved that context awareness is among the best characteristics that represent the benefit of ubiquitous learning.

Arabic language learning is known has a great wealth of vocabulary. In fact, Arabic language is one of the hardest languages to learn in the world beside Chinese, Korean and Japanese languages. It is also a difficult task for non-Arab learners to learn the languages and often demotivated them in their learning process. The difficulty in learning Arabic vocabulary is because many words having almost similar meaning and for the consequences, the learners can meet with difficulties in determining the meanings of words, idioms and phrases of colloquial languages and pronunciation [2]. To tackle the issues, reference [34] has proposed the systems for learning Arabic vocabulary that called as U-Arab. The authors design and create the system using ubiquitous technology within context aware features. The learners need to access the system using Quick Response (QR-Code) through mobile devices to facilitate their Arabic vocabulary learning process. For the summary, obviously previous research has study the benefit of ubiquitous learning in multiple languages learning component and most of the research focusing on vocabulary learning and their participants is mostly from adult language learner. However, most of the previous studies which can be found in Table 1 highlight on the development of ubiquitous learning system instead of trying to explore the interaction process between the learners that involved in the language learning environment. The question remains whether ubiquitous learning environment can provide appropriate technology support for interaction process in learning second or foreign language.

Table 1. Ubiquitous Learning Applications in Multiple Language Learning.

Author	Purpose	Participants	Method
Ogata, Akamatsu & Yano (2005)	To test TANGO (Tag Added Learning Objects) system detection of objects around the learners using RFID (Radio Frequency Identification) tags and provides the right language learning information to learners.	6 High School students in Japan	Experiment Questionnaire (Pilot Test)
Yin, Tobata & Ogata (2009)	To test the context awareness ubiquitous learning environment for Japanese polite expression learning.	10 international university students in Japan	Experiment Questionnaire (Pilot Test)
Chen & Li (2010)	To build a personalized context-aware ubiquitous learning system (PCULS) for learning English vocabulary based on learner location.	36 High school students in Taiwan	Quasi-Experiment
Huang et al., (2012)	To investigate the role of a ubiquitous English vocabulary learning (UEVL) system in assisting students in experiencing a systematic vocabulary learning process.	55 university students and 3 experts in Tainan City, Taiwan	Experiment
Ku & Chang (2012)	To investigate the students satisfaction in using elementary Chinese language learning system.	20 university students in Taiwan	Experiment Questionnaire (Pilot Test)
Chu & Chen (2014)	To investigate the students' self-regulation ability in using the WebQuest Context aware ubiquitous leaning activity for English course.	60 elementary school students in New Taipei City, Taiwan	Experiment
Alobaydi et al., (2016)	To investigate the Arabic vocabulary learning system called (U-Arabic) in the form of mobile application game with non-Arabic learners.	20 elementary school students in Pulau Pinang, Malaysia	Experiment
Uosaki et al., (2016)	To test onomatopoeia learning for Japanese language learners using the ubiquitous learning log system called SCROLL (System for Capturing and Reminding Of Learning Log).	11 international university students in Japan	Experiment Questionnaire (Pilot Test)

### 3. CONCLUSION AND FUTURE WORK

Language learning is dynamic and emergent which learners make the most of the quality learning opportunity on their own whereby the advancement of wireless and sensor technologies brings the rapid progressive evolution of learning environment from traditional learning to ubiquitous learning environment. Therefore, there is increasing concerns that many learners need an interactive and effective platform to cope with their current development and facilitate them to overcome the difficulties in learning their target language. Although technology such as ubiquitous computing technology can support the ubiquitous learning environment, the process of language learning and the interaction between the learners need to be understood. Currently, the technology available to support language learning is basically in the form of computer-assisted learning. Although extensive research has been carried out on technology that can support language learning, it still lacks of the support for an interaction environment that needed by the learners. Therefore, the technology which support language learning environment must be able to support learning interactions. Thus, the study intends to explore the requirement that needed to support the interaction component in language learning environment. Further investigations of the platform of technologies in ubiquitous learning environment with a possible focus to interaction process of the learner in learning their target language are suggested.

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### REFERENCES

- [1] Sufeng, Y., Runjuan, S., & Liming, S. "Computer-Assisted Language Learning in higher education". *In IT in Medicine and Education (ITME), 2011 International Symposium on 2011*: Vol. 1, pp. 137-141.
- [2] Idrissova, M., Smagulova, B., & Tussupbekova., M. "Improving listening and speaking skills in mixed level groups (on the material of New English File)". *In Procedia-Social and Behavioural Sciences*, 2015: 199, 276-284.
- [3] Ogata, H., & Uosaki, N. "A new trend of mobile and ubiquitous learning research: towards enhancing ubiquitous learning experiences". *International Journal of Mobile Learning and Organisation*, 2012: 6(1), 64-78.
- [4] Karahoca, D., Karahoca, A., & Kurnaz, A. "Analyzing Communication Dimensions in Ubiquitous Learning Environment". *J. UCS*, 2016: 22(1), 124-145.

- [5] Temdee, P. "Modeling of student and learning object interactions toward ubiquitous learning environment". VITAE, 2014 4th International Conference on 2014: pp. 1-5.
- [6] Garg, A., & Goel, S. "Autonomous Interaction Model in Ubiquitous Learning Systems". International Journal of Computer Applications, 2013: 70(7).
- [7] da Rocha Seixas, L., Gomes, A. S., & de Melo Filho, I. J. "Identifying interaction strategies in ubiquitous learning environments". In Information Systems and Technologies (CISTI), 2017 12th Iberian Conference on 2017: pp. 1-5.
- [8] Hwang, G. J. "Criteria and strategies of ubiquitous learning". In Sensor Networks, Ubiquitous, and Trustworthy Computing, 2006. IEEE International Conference on 2006: 2, 72-77.
- [9] Yahya, S., Ahmad, E. A., Jalil, K. A., & Mara, U. T. "The definition and characteristics of ubiquitous learning: A discussion". In International Journal of Education and Development using Information and Communication Technology (IJEDICT). 2010.
- [10] Zolkefley, M. K. I., Tahir, Z., Mohd, L. A., Aziz., A. A., & Sharif., S. M. "A Conceptual Model of Ubiquitous Language Learning Environment (ULLE)". Proceedings of the 5th International Conference on Computing and Informatics, ICOCI 2015 11-12 August, 2015 Istanbul, Turkey. 2015
- [11] Yang, T. C., Kuo, F. R., Hwang, G. J., & Chu, H. C. "A Computer-Assisted Approach for Designing Context-Aware Ubiquitous Learning Activities". In Sensor Networks, Ubiquitous and Trustworthy Computing, 2008. SUTC'08. IEEE International Conference on 2008: pp. 524-530.
- [12] Tahir, M. Z., Haron, H. & Kaur, J. "Evolution of Learning Environment: A Review of Ubiquitous Learning Paradigm Characteristics". International Conference on Electrical Engineering and Computing, ICEEComp 2018, Malaysia, 2018: 11(1), 175-181.
- [13] Lopes, Á. R., de Oliveira, D. C., de Sousa Aguiar, R. C., & Braga, R. T. V. "Context-aware ubiquitous learning: Literature systematic mapping on ubiquitous learning environments". In Computers in Education (SIIE), 2017 International Symposium on 2017: pp. 1-6.
- [14] Hwang, G. J., Tsai, C. C., & Yang, S. J. "Criteria, Strategies and Research Issues of Context-Aware Ubiquitous Learning". Educational Technology & Society, 2008: 11(2), 81-91.
- [15] Arbona, A. D., & Chireac, S. M. "Language Learning Methodology for Adults: A Study of Linguistic Transfer". Procedia-Social and Behavioral Sciences, 2014: 142, 318-324.
- [16] Golkova, D., & Hubackova, S. "Productive skills in second language learning". Procedia-Social and Behavioral Sciences, 2014: 143, 477-481.
- [17] Yıldırım, S., & Yıldırım, Ö. "The Importance Of Listening In Language Learning And Listening Comprehension Problems Experienced By Language Learners: A Literature Review". 2016
- [18] Morley, J. "Aural comprehension instruction: Principles and practices. Teaching English as a second or foreign language", 2001: 3, 69-85.
- [19] Tavil, Z. M. "Integrating listening and speaking skills to facilitate English language learners' communicative competence". Procedia-Social and Behavioral Sciences, 2010: 9, 765-770.
- [20] Krashen, S. "We acquire vocabulary and spelling by reading: Additional evidence for the input hypothesis". The modern language journal, 1989: 73(4), 440-464.
- [21] Genc, B., & Bada, E. "Culture in language learning and teaching". The Reading Matrix, 2005: 5(1).
- [22] Etemadzadeh, A., Seifi, S., & Far, H. R. "The role of questioning technique in developing thinking skills: The ongoing effect on writing skill". Procedia-Social and Behavioral Sciences, 2013: 70, 1024-1031.
- [23] Zailaini, M. A., Mohamed, M. F., Ismail, W. M., Ali, S. K. S., & Muzammil, A. G. "Writing Skill in Arabic Language Essay in Malaysian Secondary School". 2015
- [24] Neuman, S. B., & Dwyer, J. "Missing in action: Vocabulary instruction in pre-K". The Reading Teacher, 2009: 62(5), 384-392.
- [25] Alqahtani, M. "The importance of vocabulary in language learning and how to be taught". International Journal of Teaching and Education, 2015: 3(3), 21-34.
- [26] Oxford, R., & Crookall, D. "Vocabulary learning: A critical analysis of techniques". TESL Canada Journal, 1990: 7(2), 09-30.
- [27] Lavasani, M. G., & Faryadres, F. "Language learning strategies and suggested model in adults processes of learning second language". Procedia-Social and Behavioral Sciences, 2011: 15, 191-197.
- [28] Cohen, A. D. "Strategies in learning and using a second language". Routledge. 2014
- [29] Chen, C. M., & Li, Y. L. "Personalised context-aware ubiquitous learning system for supporting effective English vocabulary learning". Interactive Learning Environments, 2010: 18(4), 341-364.
- [30] Huang, Y. M., Huang, Y. M., Huang, S. H., & Lin, Y. T. "A ubiquitous English vocabulary learning system: Evidence of active/passive attitudes vs. usefulness/ease-of-use". Computers & Education, 2012: 58(1), 273-282.
- [31] Ku, D. T., & Chang, C. C. "Development of Context Awareness Learning System for Elementary Chinese Language Learning". In Genetic and Evolutionary Computing (ICGEC), Sixth International Conference on 2012: pp. 538-541.
- [32] Uosaki, N., Kiyota, M., Mouri, K., Ogata, H., & Choyekh, M. "Onomatopoeia Learning Support for Japanese Language Learners Using Ubiquitous Learning Log System with eBook". In Advanced Learning Technologies (ICALT), 2016 IEEE 16th International Conference on 2016: pp. 347-348.
- [33] Yin, C., Tabata, Y., & Ogata, H. "Design a Context Awareness System for Japanese Language Learning in Ubiquitous Computing Environment". In Web Information Systems and Mining, 2009. WISM 2009. International Conference on 2009: pp. 454-458.
- [34] Alobaydi, E. K., Mustaffa, N., Alkhayat, R. Y., & Arshad, M. R. H. M. "U-Arabic: Design perspective of context-aware ubiquitous Arabic vocabularies learning system". In Control System, Computing and Engineering (ICCSCE), 2016 6th IEEE International Conference on 2016: pp. 1-6.