# **Original Paper**

# Padlet as a Tool in Learning L2 Grammar

Nisha Abd Halim<sup>1\*</sup> & Aspalila Shapii<sup>1</sup>

<sup>1</sup> Universiti Utara Malaysia, Sintok, Kedah, Malaysia

\* Nisha Abd Halim, E-mail: chersha83@gmail.com

Received: March 29, 2023	Accepted: April 17, 2023	Online Published: April 26, 2023
doi:10.22158/lecr.v3n1p40	URL: http://dx.doi.org/10.22158/lecr.v3n1p40	

# Abstract

Padlet can be used as a platform to collaborate in collecting ideas, brainstorming, and more. Students will be able to access it for free, no matter what device they have. Padlet is used in this research as a tool in learning L2 Grammar as it is in line with the Malaysian education blueprint whereby there is the need of leveraging ICT to scale up quality learning across Malaysia in shift 7. This study explores the impact of Padlet in learning L2 grammar among primary ESL students and it aims to study the students' perceptions of using Padlet in learning L2 grammar and it consists of observation, document analysis, pre-post tests and semi structured interviews collected from 24 respondents and 2 teachers. The data were analysed using SPSS and thematic analysis. The findings suggest that when students use learning software such as Padlet, they achieve better understanding of L2 Grammar because Padlet highly motivates them to connect the use of technology with the contents of the lesson. Moreover, they are able to trace their grammar acquisition by doing their self-assessment from the activities and material provided by the teacher during every lesson.

### Keywords

Padlet, L2 grammar, collaborative learning, 21<sup>st</sup> century teaching and learning, peer assessment, self-regulated learning, students' self-assessment

## 1. Introduction

In education, ICT has become a need for teachers and students to acquire the knowledge and skills for them to be in the same pace as their counterparts all around the world (Hurmuzan & Yahaya, 2015; Basavaraja & Sampath Kumar, 2017; Towards & Sciences, 2021). Our Malaysian education system has encouraged the 21st century teaching and learning to be adopted by teachers whereby The Education Performance and Delivery Unit (PADU) has published an article on December 20<sup>th</sup> 2018 stated that the primary objective of the 21st Century Learning Teachers' Campaign is to celebrate and share best practices of how teachers bring PAK21 (Pembelajaran Abad Ke-21) into their classrooms. For instance,

the Web 2.0 tools are very familiar to many, due to the seemingly ubiquitous adoption (Weller, 2013; Md Deni & Zainal, 2017) of such tools for entertainment and personal communication: YouTube, Skype, Facebook, Google Docs, Word Press, Blogger, Wikipedia and Padlet which is formerly known as Wallwisher (Weller, 2013) and they are meant to be the communication tools and it should promote engagement between the students. As asserted by Ellis (2015) and Jong & Kim Hua (2021), Padlet can make students feel less intimidated when participating in class discussions and can improve the overall learning experience by allowing them to interact with topic material and fellow students' perspectives.

## 2. Method

# 2.1 Research Design

This research adopted the case study research design (Creswell, 2014), where it begins with the identification of a specific case and examine current, real-life cases that are in progress. It also contributes recent findings from the data collection.

#### 2.2 Role of Researcher

To complement the role as observer-participant, the researcher ensured that all of the students were aware of the purpose of the research and it cannot be denied that the students had a slight change of behaviour after they were informed of being observed.

#### 2.3 Research Respondents

The samples were selected from the convenient sampling of 24 Year 5 students of SK X. The school is located in the outskirt of Kota Bharu where there are 391 pupils with 38 teachers.

# 2.4 Research Instrument

This study adopted multiple data collection methods such as observation, document analysis and interview.

## 2.4.1 Document Analysis

Qualitative Document Analysis (QDA) is a research method for rigorously and systematically analyzing the contents of written documents (Wach, 2013). Before applying the teaching and learning lesson via Padlet, the researcher did a study to operate and understand the typical of Padlet in terms of the functions and advantages of using it as a tool in teaching L2 Grammar.

## 2.4.2 Observation

As to discover the students' learning process via Padlet, the field notes were precisely taken during the teaching and learning session. Good field notes should be descriptive to include verbal portraits of the participants, a reconstruction of the dialogue, and a description of the physical setting as well as accounts of particular descriptions of the observer's behavior (Tinny, 2013). Every single observation during the case study was recorded including the behavior of the participants in order to see the impact of Padlet in teaching and learning of L2 Grammar. In this study, the researcher wrote down her field notes and reflections of what happened in the classroom.

#### 2.4.3 Semi-Structured Interview

The semi structured interview with the students was done in order to get in-depth understanding of the impact and to discover the perceptions of the students in learning L2 grammar by using Padlet.

## 2.5 Research Procedure

The study involved a few stages: gaining access into the sites, pilot study and the main study. The consent letter was sent to the Headmaster as well as for all the pupils after receiving the approval from EPRD (Educational Planning and Research Department) in Education Ministry. The pilot study was done to introduce Padlet and to see any weaknesses in the teaching and learning session by using Padlet (using a different set of lesson plan) and the tasks given along the research to different set of samples.

In the main study, the teaching and learning lesson was introduced by explaining the topic for about 20 minutes via Padlet as a platform. For every lesson, the pupils were asked to click on the individual task and try to answer questions online. The answers were discussed together in the class as for the preparation to write formatted writing in the fourth lesson (week 4). The first and second lessons were on the topic of Modal Verbs. For the third lesson, the students were assigned to answer the questions of Present tense and for the Fourth lesson students were tested on the Past Tense. Every group had to check the other group's work and the final product was shown as a whole on the Padlet. The students' work (email writings) before being checked by their peers was saved for document analysis purposes as before and after products. For the third stage, pupils were asked to do individual assessment by referring to the Padlet as the platform of their knowledge source. The teacher selected 5 email writings randomly during the fourth lesson and their other peers will check the use of Modal Verbs, Present Tense and Past Tense. The final product was displayed and the comparison of before and after correction was analysed. Last but not least, the semi-structured interview was conducted to 5 of the students in order to gather ideas and opinions from the intervention.

# 2.6 Data Collection and Analysis

The first stage in analyzing the data in this research was the document analysis of the students' group work before and after they collaborated in doing peer assessment via Padlet as document analysis is a systematic procedure for reviewing or evaluating documents—both printed and electronic (computer-based and Internet-transmitted) material (Bowen, 2009). Next, the field notes coding from the jottings of observation and transcribing session of semi structured-interview was done in order to search for any extraordinary findings through the research. Thematic analysis was used to analyze the data obtained from the interview and observation in order to summarize the key features in a large set of data as claimed by Braun and Clarke (2006) that thematic analysis is a method for identifying, analyzing, and reporting patterns (themes) within data and it minimally organizes and describes the data set in (rich) detail.

# 3. Result

The participants of this research were Year 5 pupils and their respective English language teacher from a primary school in Kota Bharu, Kelantan. The respondents of this study consisted of 24 pupils from a Year 5 class. There were 2 classes of Year 5, and only one class was selected for the research. They are all Malays and their proficiency level of English is specified according to their result of English language Writing paper for Section B in LK 1. LK stands for *Latihan Kecemerlangan*, which is known as semester examination which is done periodically in a schooling year. LK 1 was done in March 2020. The English Language papers consist of three sections namely Sec A (Information Transfer), Sec Bi (Listing), Section Bii (Formatted Writing) and Section C (Story Writing). Section Bii is being focused in this study because students seem to get low marks in this section even though they only have to write about 80 words. Moreover, they are in the first class and the result was beyond expectation. The red-coded marks in the table represents the below 6 marks. From the result, it can be concluded that 14 pupils (58.3%) got below 6 marks in Section B ii for LK 1 and only 10 pupils (41.7%) got 6 marks and above from the full mark which is 12. Most of them are unable to write appropriately with major errors especially using Modal Verbs, Present Tense and Past Tense.

Two critical friends have been interviewed in order to enhance the inter-rater reliability of the research. Teacher Ina who is the Head Panel of the English Language has been teaching for 22 years. She has a Bachelor's Education Degree in TESL from OUM (Open University Malaysia) in 1997 and another critical friend that has been invited in this study is Teacher Ana. She is the Headmistress of the school and she has 19 years' experience of teaching English before being promoted to Headmistress. The data were collected using Pre and Post-Test, classroom observation and document Analysis of students' work. The students were divided into 11 groups consisting of mixed level of L2 grammar acquisition. There were 11 male and 13 female students. The lessons were conducted within a month in 4 lessons consisting of three topics; Modal verbs, present Tense and Past Tense.

#### 3.1 Pre-Test Score and Document Analysis

The Pre-Test was conducted before every topic to identify their knowledge on each grammar item. Three tests were conducted measuring knowledge on modal verbs, present tense and past tense. The data collected from the Pre-test score indicated that the pupils have difficulties in understanding the rules of Modal Verbs. Table 4 shows that majority of the pupils in the classroom could not score high marks in the test and the range of the pre-test scores was between 35% and 78%. This could be due to lack of understanding of the concept of choosing the right and appropriate modal verbs for each answer. Figure 1 shows a sample of questions and answers given by the students (Group X) which they only scored 50% during the pre-test.



Figure 1. Sample Answer of Modal Verb Quiz

In relation to Present Tense, another pre-test was conducted to identify their knowledge. The pre-test score of the present tense shows that the students were able to get more than 50% correct answers. There were also 2 pairs that have scored 100% due to their previous knowledge of learning the tense. The data collected from the pre-test score explains that there were 4 groups that could not manage to score 50% and above for the past tense quiz. This could be due to the difficulties in applying the past tense verbs and some of them were confused with the past tense verb-to-be for the singular and plural nouns.

# 3.2 Paired Sample T-Test

The paired sample T-Test was analyzed to identify the significant difference between the Pre and Posttests. The findings have determined to what extent learning grammar by using Padlet has impacted the understanding of the grammar items.

A paired sample t-test was conducted to study the impact of learning L2 grammar by using Padlet as the platform. There was statistically significant increase in Modal verbs when using Padlet. The paired T-test showed a significant value of p=0.00, p<0.05. The mean scores of the pre-test was (mean=55.27, SD=13.03) while the post-test [mean=80.58, SD=12.11, t(10)=-7.44, p≤0.05]. The comparison between mean score of pre-test and post-test showed that learning L2 grammar by using Padlet has impacted the understanding of the Modal Verbs Lesson among the pupils. The result of the pair T-test is able to reject the Null Hypothesis that there is no significant difference between the pre and the post test scores in Modal verbs. Learning L2 grammar by using Padlet has aroused pupils' comprehension and they were able to choose the appropriate Modal verbs and apply the rules when using it.

S1 had explained the use of Modal Verb in the sentence which highlighted that his friend could not use the past tense verb together with the Modal Verb by saying that "*Hey you, this is modal verb right, you can't put the past tense verb, you have to put to base word form*" and "*Change this, saw to…*.". The group member then realized their mistake and was able to say the correct base word to be replaced in the sentence "*Oohh…. it is 'see'*. The result of the pair T-test was able to reject the Null Hypothesis that there was no significant difference between the pre and the post test scores in Present Tense verbs. This finding was further strengthened by the classroom observation which indicated how the students worked together to improve the essay.

For every lesson, there was a pre-test conducted to collect the data of this study. For this second topic, the pre-test was regarding the rules of present tense. There was statistically significant increase on the use of Padlet in the present tense lesson whereby the mean for the pre-test (mean=71.36, SD=17.33) and post-test [mean=94.54, SD=8.20, t(10)=-5.05,  $p\leq0.05$ ]. The pupils seemed to understand the use of present tense after they have watched the videos and they could refer to the materials/notes provided on the Padlet. The result of the pair T-test was able to reject the Null Hypothesis that there was no significant difference between the pre and the post test scores in Present Tense verbs. They could remember the song as the formula to answer the questions in the quiz online. Similarly, in the classroom interaction data, students were found to help each other to understand the past tense. For example, in 13, S2 requested her friend to replay the video that had the present tense and they listened together. In addition, in line 14, S4 explained the rules to her friends, "*haaaa... and he gives... so, if it is plural, no 's', if it is singular, with 's*".

During the observation, there was a pupil re-played the song on the Padlet in order to recall the formula of the rules. For the document analysis, it is proved that the essay written by the pupils was improved because of the use of Padlet as a platform in learning grammar. As shown in this extract, learning was taking place whereby good students worked collaboratively with the weaker students to solve grammatical problems.

#### Table 1. Classroom Observation Lesson 3

15	5 S1 eh napok srupo ado saloh ni, ha this one plural kae nih, activities, yo keno jadi		
		'are' < It looks like something is wrong here, this is plural noun so we need to	
		change to 'are'>	
16	S2	Oh ni deh, mari aku taip < Let me type it>	
17	S3	nihnih hok nih nih keno wak yo jadi present ni. <this need="" one="" td="" this="" to<=""></this>	
		change it to present>	
18 S2 hok ni ko? verb-to-be nih deh, 'was' <is it="" one?="" right="" this="" verb-to-be,=""></is>			
19	19 S1 Mu tuka la jadi 'are' sebak plural tu <you 'are'="" because="" change="" need="" of<="" td="" to=""></you>		
		plural noun	

From the excerpt, it shows how the students rechecked and organized their mistakes by helping each other in deciding the appropriate verb-to-be for the plural present tense verb-to-be "*It looks like something is wrong here, this is plural noun, so we need to change it to 'are'*". Then they recognized more mistakes on the use of past tense verb in present tense essay "*This one… this one… need to change it to present*". The students were found deeply in discussion and they had shown great interest in learning via Padlet.

The third lesson was the Past Tense. The paired sample T-test was done after the data has been collected via pre and post-tests. The mean for the pre-test (mean=67.27, SD=25.33) and post-test [mean=90.00, SD=15.49, t(10)=-4.49,  $p\leq0.05$ ] shows that there was a significance different between the pre and post-test when the P value is 0.01. The result of the pair T-test was able to reject the Null Hypothesis that there was no significant difference between the pre and the post test scores in Past Tense. It portrays that most of the pupils could answer the post-test quiz of the Past tense topic and Padlet has given a big impact when the pupils were able to work in teams and reminded themselves of the use of Past tense verbs. There was a pupil tried to help his friend on recalling the notes on the Padlet and they had made some discussions. Those two pupils were actually weak pupils and one of them was able to stimulate his friend while trying to find the answer for the online quiz. It also shows that Padlet could provide them a platform that they could revise and discuss about the topics learned.

## 3.3 The Students' Perceptions of Padlet in Learning L2 Grammar

Data were collected from the interview with the students and the inter-rater reliability by interviewing the other 2 teachers as the critical friend's review. There are three emerging themes from the students' perceptions and four emerging themes discovered from the teachers' reviews. Figure 1 and 2 are the perceptions and reviews from the students and the teachers.

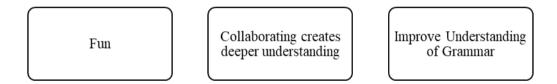


Figure 2. The Emerging Themes of Students' Perceptions

The students seemed to enjoy the lesson because they were happy and excited to listen to the songs and videos that the teacher had provided. The fun learning activity occurred and it created a positive environment where they could memorize the rules of the grammar by repeating the song from the Padlet. It is clearly proven when Aquamarine and Diamond mentioned that they were having fun when they could listen to the song and memorized the content of the lesson.

During the observation, the students were active and the More Knowledgeable Other (MKO) has helped their friend to master the grammar by doing peer corrections. Most of them loved to be corrected by their peers and the lesson was beneficial because they were able to amend their sentences straight away. It has also improved the understanding of the grammar among the students as it answers the first question regarding the impact of learning grammar via Padlet as they were able to re-do and revise the online quizzes at home. Fun

Collaborating creates deeper understanding Improve Understanding of Grammar

Online group assessment/platform

Figure 3. The Emerging Themes of Teachers' Review

From the extract of teachers' point of view, they support that Padlet helps them to improve their understanding of grammar, as proven in the findings, as well as infusing technology in the teaching and learning. The Headmistress did mention that Padlet has really attracted the pupils to focus because the use of the Padlet as the platform instead of the conventional black/white board which is extraordinary in enhancing the understanding of grammar.

## 3.4 Summary of the Major Themes Derived from the Interview

From the findings, it can be concluded that learning via Padlet is effective in terms of creating a fun learning environment that would attract the students to focus and concentrate in the lesson. It has also reduced the learning anxiety when they could refer to the notes in the Padlet whenever they have any confusion. Learning via Padlet is found to be a collaborative platform when the students could contribute their knowledge with everybody in the class during the lesson. Padlet is used as the platform for online quizzes for assessment and the students were seen profoundly comfortable to assess the quiz not only during the teaching and learning lesson but also at home. The impact of learning via Padlet was seen to be fruitful when they could enhance their L2 grammar acquisition by showing improvement in the posttest and also during the peer correction session.

### 4. Discussion

In general, the findings reveal that most of the students have shown improvement in the acquisition of the tenses learned during the research. Vygotsky (1978) argues that social interactions with more knowledgeable others (MKO), such as more advanced peers and adults, children eventually develop higher mental functions such as language, counting, problem solving skills, voluntary attention, and memory schemas. The most practical activity that has been practiced along the research is correcting the grammatical errors of the other peers. The improvement of their writing was proven by the document analysis from the tasks given after every lesson was taught. The MKO from the other groups also helped their other friends in different group when they had recognized the mistakes or grammatical errors of the writing. This activity indicated that Padlet has given an immense impact of enhancing cooperative learning among the pupils (Jong & Kim Hua, 2021). Moreover, some of the students who have the internet access have managed to use Padlet when they needed to recall the notes.

From this theme, it is clearly shown that Padlet had provided fun route for students to study and the fact that pupils showed interest in learning is really amazing. They seem really excited when they clicked on the songs and videos provided as the support materials on the Padlet. The observation of Teacher 1 highlighted that the pupils needed guidance and support materials in learning L2 grammar. She also

mentioned that it is good that Padlet could provide an ongoing learning because the pupils were able to connect with Padlet anytime as the resources of the topic.

Teacher 2 mentioned that she could see the positive feedback on Padlet as a tool in learning L2 grammar when every pupil was able to make sure that they were on the right track. They were able to recognize their friends' mistakes and corrected them straight away. It is also proven by the pupils that direct learning had occurred when the More Knowledgeable Others (MKO) tried to help their other peers and it had instilled a positive value of cooperative learning. This is in line with Ellis (2016), that learning via Padlet could enhance active learners where he cited in Dembo and Bellow (2013) that suggested tools such as Padlet give opportunities to support classroom-based collaborative activities. Teacher 1 did notice that the pupils had fun learning when they discussed the questions and wrote the essays for the tasks. They seemed to enjoy the lesson and the learning happened in a meaningful way when they could help each other. This supported that "Collaborative learning" is an umbrella term for a variety of educational approaches involving joint intellectual effort by students, or students and teachers together (Smith & MacGregor, 1992).

In today's world, technology is crucial in transmitting knowledge among students; as proposed by Lateh and Muniandy (2010) that information and Communication Technology (ICT) has been introduced and widely used among schools in Malaysia since 1970 onwards and computer education programme started in 1999. They also mentioned that the dispersion of ICT usage among subjects varies and some subjects have become less preferred by students. Hence the use of one of the web 2.0 in this research which is Padlet could support the needs of today's world. Therefore, it is vital for the implementation of 21<sup>st</sup> century teaching and learning to be employed from the primary level. It is found that the students who were involved in this study gave their very best in performing their jobs especially in peer assessment as well as completing the online quizzes. From the findings, it suggests that when students use Padlet as a tool in learning L2 Grammar they achieve better learning outcomes because Padlet highly motivates them to connect the use of technology with the content of class. Therefore, in conjunction with the era of information and communication technology, it is suggested that teachers integrate Padlet in the learning environment as well as make full use of technology and programs that have been introduced by the Ministry of Education in DELIMA (Digital Learning Initiative Malaysia) program. It is recommended that in future research, more studies could be carried out especially in using Padlet as a tool in learning L2 Grammar locally. This strategy is very important in ensuring the implementation of using Padlet as a tool in learning L2 Grammar. The research could be narrowed down into topics and skills learned and different types of assessment that can be used while using the Padlet as the Platform.

48

# References

- Abdullah, M., & Osman, K. (2010). 21st century inventive thinking skills among primary students in Malaysia and Brunei. *Procedia - Social and Behavioral Sciences*, 9, 1646-1651. https://doi.org/10.1016/j.sbspro.2010.12.380
- Basavaraja, M. T., & Sampath Kumar, B. T. (2017). Gender disparities in the use of ICT: A survey of students in urban schools. *Journal of Information Science Theory and Practice*, 5(4), 39-48. https://doi.org/10.1633/JISTaP.2017.5.4.3
- Butler, Y. G. (2016). Self-Assessment of and for Young Learners' Foreign Language Learning. *Educational Linguistics*, 25, 291-315. https://doi.org/10.1007/978-3-319-22422-0 12
- Butler, Y. G., & Lee, J. (2010). The effects of self-assessment among young learners of English. *Language Testing*, 27(1), 5-31. https://doi.org/10.1177/0265532209346370
- Bowen, G. A. (2009). Document Analysis as a Qualitative Research Method. *Qualitative Research Journal*, 9(2), 27-40. https://doi.org/10.3316/QRJ0902027
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101. https://doi.org/10.1191/1478088706qp063oa
- Creswell, J. W. (2014). Research Design: Qualitative, Quantitative and Mixed Methods Approaches (4th ed.). Thousand Oaks, CA: Sage. *English Language Teaching*, 12(5), 40. https://doi.org/10.5539/elt.v12n5p40
- Dembo, S., & Bellow, A. (2014). Untangling the Web : 20 tools to power up your teaching. Moorabbin, Vic. Hawker Brownlow Education. https://doi.org/10.4135/9781506374642
- Doolittle, P. E. (1997). Understanding cooperative learning through Vygotsky's zone of proximal development. *Journal on Excellence in College Teaching*, 8(1), 83-103. Retrieved from http://files.eric.ed.gov/fulltext/ED384575.pdf
- Ellis, D. (2015). Using Padlet to increase student engagement in lectures. *European Conference on eLearning*. Held 29-30 October 2015 at Hatfield, UK.
- Elise Wach. (2013). Learning about Qualitative Document Analysis.
- Haris, M., Yunus, M., & Badusah., J. (2017). The Effectiveness Of Using Padlet In Esl Classroom. International Journal of Advanced Research, 5(2), 783-788. https://doi.org/10.21474/IJAR01/3214
- Ibsen, C. L. (2016). The Use of Padlets for Group Exercises.
- FAOS Department of Sociology/University of Copenhagen.
- Hurmuzan, S., & Yahaya, W. (2015). An Early Review and Preliminary Investigation: Potential of Developing Multimedia Learning Courseware in Facilitating the Enhancing of Students Performance Standard in the Information and Communication Technology Subject.
- Kota Bharu, K. (2015). Malaysia, 13-15 September 2015 21st Century Teaching and Learning.
- Jong, B., & Kim Hua, T. (2021). Using padlet as a technological tool for assessment of students' writing skills in online classroom settings. *International Journal of Education and Practice*, 9(2), 411-423. https://doi.org/10.18488/journal.61.2021.92.411.423

Published by SCHOLINK INC.

- Lateh, H., & Muniandy, V. (2010). ICT implementation among Malaysian schools: GIS, obstacles andopportunities. *Procedia - Social and Behavioral Sciences*, 2(2), 2846-2850. https://doi.org/10.1016/j.sbspro.2010.03.426
- Mazloomi, S., & Khabiri, M. (2018). The impact of self-assessment on language learners' writing skill. *Innovations in Education and Teaching International*, 55(1), 91-100. https://doi.org/10.1080/14703297.2016.1214078
- Md Deni, A. R., & Zainal, Z. I. (2017). "I Love It But I Don't Use It": Students' Perceptions on the Use of Padlet as an Educational Tool for Learning. https://doi.org/10.1145/3290511.3290512
- Paris, S. G., & Oka, E. R. (1986). Self-Regulated Learning among Exceptional Children. Exceptional Children, 53(2), 103-108. https://doi.org/10.1177/001440298605300201
- Reka Ramachandiran, C., & Maria Mahmud, M. (2018). *Padlet: A Technology Tool for the 21st Century Students Skills Assessment. 1*, 101-107. https://doi.org/10.26499/iceap.v1i1.81
- SeifodinRajabi. (2012). *Towards self-regulated learning in school curriculum*. Department of English Language Teaching, Kermanshah Branch, Islamic Azad University. 6718997551, Kermanshah, Iran.
- Smith, B. L., & MacGregor, J. T. (1992). Collaboration Learning: A Sourcebook for Higher Education. University Park, PA: National Center on Postsecondary Teaching, Learning, and Assessment (NCTLA), 159-189.
- Tinny, M. (2013). Note taking: A lesson for Novice Qualitative Researchers. IOSR Journal of Research & Method in Education (IOSRJRME), 2(3), 13-17. https://doi.org/10.9790/7388-0231317
- The Education Performance and Delivery Unit (PADU). (20 december 2018). 21ST CENTURY LEARNING TEACHERS CAMPAIGN LAUNCH.
- Towards, S., & Sciences, H. (2021). THE ATTITUDES OF TEACHERS AND STUDENTS TOWARDS USING WEB 2.0 TOOLS IN EFL CLASS Nuray Okumuş Ceylan 1. 5(1), 11-22.
- Vygotsky, L. S. (1978). Mind in society. Cambridge: Harvard University Press.
- Weller, A. (2013). *The use of Web 2.0 technology for pre-service teacher learning in science education*.3(2). University of East London.
- Zimmerman, B. J. (2000). Attaining self-regulation: A social cognitive perspective. In M. Boekaerts, P. R. Pintrich, & M. Zeidner (Eds.), *Handbook of self-regulation* (pp. 13-39). San Diego, CA, US: Academic Press.