Perceptions towards Ubiquitous Learning: A Study on ESOL Stakeholders of the University of Dhaka

Afiya Jahin[1], Abdullah Al-Mamun[2]*

[1]Institute of Modern Languages, University of Dhaka, Dhaka-1000, Bangladesh
[2]Institute of Education and Research, University of Dhaka, Dhaka-1000, Bangladesh

Abstract: This research aims to explore how ubiquitous learning (UL), a recently developed teaching and learning technique that offers learning from anywhere and anytime, impacted the educational experiences of the stakeholders of a Bachelor program in Dhaka University named English for Speakers of Other Languages (ESOL). This study has used a mixed-method approach, collecting quantitative data from students through a questionnaire and qualitative data by focus group discussion (FGD) with students, in-person interviews with teachers, and over-phone interviews with guardians to get an overall picture. The paper illustrates how to minimize the obstacles to the integration of ubiquitous learning into English language teaching-learning. In addition, the article highlights the impact of ubiquitous learning on the development of all four basic language skills. This research can serve as a guideline for the English language students studying at different universities in Bangladesh.

Keywords: *Ubiquitous learning, ESOL stakeholders, educational experience, perception, integration of UL*

Introduction: Ubiquitous Learning (UL) is a pedagogical approach that employs technology and internet access to facilitate learning from anywhere and at any time. Learning languages is a primary objective, making this method increasingly relevant in English for Speakers of Other Languages (ESOL) programs. Distance learning, e-learning, flipped learning, blended learning, and mobile-assisted language learning are all facets of ubiquitous learning, enabled by technology for flexible, anytime, anywhere education. U-learning can be defined as a new educational paradigm in which we learn about anything at anytime and anywhere utilizing ubiquitous computing technology and infrastructure [1]. According to [2], ubiquitous learning extends beyond traditional classrooms, integrating education into various settings, such as homes, workplaces, and daily life, leveraging the pervasive presence of computers and technology. While [3], [4] and [5] talked about ubiquitous learning, as a mobile-based strategy, offers anytime, anywhere access to educational resources, interactive activities, and collaborative learning, thereby expanding educational opportunities and reducing poverty. According [6] and [7], ubiquitous learning seamlessly blends technology and traditional classroom instruction to give learners on-demand access to educational resources from any location. The key Characteristics of ubiquitous learning are permanency, immediacy, interactivity, context-awareness, and adaptability [1], [6], [2] and [7]. Thus, Ubiquitous Learning leverages technology to offer a dynamic, individualized teaching experience with permanency, immediacy, interactivity, context-awareness, and adaptability. Digital technologies in computers, mobile phones, and tablets offer ubiquitous learning. It intends to give students wireless access to learning everywhere. Education stakeholders must design plans to put the necessary technology and software in schools so students can learn anywhere [1]. [5] said wireless and mobile gadgets enable novel methods of communication. Mobile technologies enable learning on PDAs, mobile phones, laptops, and PC tablets (handwriting-friendly PCs). [4], [5] and [8] mentioned the importance of ubiquitous learning in language learning, highlighting that UL leverages mobile devices and technology for accessing language resources and practicing skills. It connects informal and formal learning, enabling interactive activities, encouraging learner autonomy, personalizing experiences, and facilitating authentic language use through apps and online platforms, ultimately enhancing language skills. Additionally, [9] revealed positive attitudes toward integrating technology into English language learning as instructors prioritize taking preparation, teaching efficiency, and resource control by using technology and Students who frequently utilize computers and the Internet for educational purposes.

Teacher competence and professional development are crucial for effective online instruction involving technology use, engaging activities, and virtual interactions. Ongoing professional development helps teachers stay updated with research and best practices, ensuring high-quality instruction. These factors contribute to the successful implementation of online instruction, promoting student engagement, learning outcomes, and satisfaction. Training in online pedagogy and assessment is essential to address challenges and ensure equitable access to education [8]. Similarly, [9] mentioned that teachers must possess the expertise, skills, and attitudes necessary to integrate technology. This competency is enhanced by providing opportunities for ongoing learning and updating teachers with the most recent advances in technology. This approach encourages motivation and enhances learning outcomes by fostering a supportive learning environment.

Corresponding author details: Abdullah Al-Mamun
E-mail address: mamun.ier@du.ac.bd
Tel: 01940193664

English as a global language necessitates high proficiency for learners to achieve global competence. The ESOL program in Bangladesh aims to facilitate effective teaching and learning. Understanding stakeholders' perspectives on UL is crucial for improving the quality and efficacy of English language education. This study will provide insights into integrating technology into language education and its effects. The outcomes can also help formulate policies, curricula, and strategies for ESOL education in Bangladesh in line with the evolving educational environment. Understanding stakeholders' perspectives on UL will help improve the quality and efficacy of English language education.

This paper will investigate the present state of knowledge and comprehension of ubiquitous learning among stakeholders at the university. After examining the stakeholders' perceptions, the study can attempt to improve the curriculum of ESOL. It can ensure the relevancy and efficiency of ubiquitous learning in the constantly evolving field of language education. This study will play a significant role in the administration while inaugurating the ESOL Program in other universities of Bangladesh.

The study will examine the following questions:

1. How do ESOL students perceive the significance of ubiquitous learning to language learning?
2. What are the perceptions of ESOL teachers about ubiquitous learning in language learning?
3. How do the guardians of ESOL students perceive ubiquitous learning?

Methodology: According to [10], research methodology is a method to analytically explain the research problem. The research methodology ensures a clear purpose, effective data interpretation, generalizability, replication, and a clear focus throughout the study. Mixed method research is a method for collecting, analyzing, and mixing qualitative and quantitative data in a single study to address the research problem [11]. Mixed methods research combines quantitative and qualitative approaches to comprehensively understand complex phenomena, triangulating and comparing findings through concurrent or sequential data collection. Cross-validation improves the findings' validity and reliability.

This is a mixed-method research where Quantitative data were collected from students by providing a survey through questionnaires on the Likert scale, and Qualitative data were taken from students by FGD, from teachers through in-person interviews, and from guardians over phone interviews. After that, the researchers cross checked the data through triangulation.

The research involved 30 ESOL students surveyed via random sampling (15 males, 15 females), with 2 teachers selected by convenience sampling approach. 9 students for focus group discussion and 5 guardians for semi structured interviews were randomly chosen. After collecting the data, the researchers reduced the data and identified several themes. The data were analyzed thematically.

Findings:

1. Students' integration of ubiquitous learning technological tools
1.1. Students' learning through ubiquitous learning technological devices
All students (30 students - 100%) took part in the survey used ubiquitous learning technology tools or devices to facilitate language learning anywhere, anytime, in any situation.

Table 1. Types of ubiquitous learning technological devices used by the students

Types of U-Learning Technological Devices	Used by students (%)
Laptop	73.33
Smartphone	100
Personal Computer	23.33
Tabloid Pcs	0
Notebook	6.67
Others	0

1.2. Kinds of technological platforms students use to attend online classes

Table 2. U-Learning Technological Platforms Used by Students for Online Classes

U-Learning Technological Devices	Used by Students (%)
Zoom	86.67
Google-Meet	83.33
Google Duo	16.67
Hangouts	0.00
Microsoft Team	6.67
Edmodo	3.33

The table highlights students' usage of various online platforms for learning English. 86.67% utilized Zoom, 83.33% used Google Meet, 16.67% employed Google Duo, 3.33% opted for Edmodo, and 6.67% utilized Microsoft Teams. Notably, Hangouts saw no usage for online classes or English learning.

1.3. Kinds of technological tools students used for learning English

Table 3. kinds of technological tools used for learning English

U-Learning Technological tools	Used by students (%)
Duo lingo	66.66
Google Classroom	43.33
Social Media	76.66
Online Games	23.33
Online Quizzes	20
Wikipedia	46.66
Google Scholar	3.33
Online Newspaper	3.33
Websites	3.33
Ai Websites +apps(Chat GPT)	3.33

1.4. Duration of students' use of technology for learning

Table 4. Duration of their use of technology for learning

Duration	used by students(%)
One hour Per day	46.66
Two hours	13.33
More than two hours	33.33

2. Ways of Students' getting benefits from Ubiquitous Learning

Table 5. Ways of students' getting benefits from ubiquitous learning

Items	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
1. Learning anywhere increases flexibility and accessibility.	0%	0%	11%	52%	37%
2. Using technology in learning English provides a learning environment anytime, anyplace.	4%	0%	3%	41%	52%

3. In addition to the classroom and textbook, technology provides me with abundant resources and authentic materials to enhance my learning.	0%	0%	10%	37%	53%
4. Technology-based language learning reduces teacher-dependency.	0%	3%	17%	50%	30%
5. It is more convenient to use dictionaries on technological devices than to use conventional dictionary volumes.	3%	0%	13%	27%	57%
6. To improve my English skills, I frequently listen to English songs, read English news articles, and watch English movies.	0%	3%	10%	57%	30%
7. I believe that attending three online classes per week is more practical because it avoids the need to travel to campus, saves time, and reduces expenses.	0%	27%	30%	20%	23%
8. I frequently use technological devices to complete writing assignments as they enable me to discover relevant articles.	0%	7%	10%	46%	37%
9. Technology-based learning is more engaging and motivating than text-based learning.	0%	13%	10%	50%	27%
10. I prefer to submit my assignments via Google Docs, Microsoft Word email, or Google Drive over printed copies.	0%	3%	13%	37%	47%
11. Through technology, I can access my teacher from anywhere at any time to receive feedback.	3%	3%	10%	50%	34%
12. In addition to the classroom, learning English through the use of technology improved my knowledge and skills and enhanced my performance.	0%	0%	10%	50%	40%

The overall survey result shows that Students appreciate technology-based language learning for its adaptability, accessibility, resources, decreased reliance on teachers, convenience, and engaging experiences, which enable submitting online assignments, getting teacher feedback, and developing skills.

3. Students' perception and acceptance of the effectiveness of technology in learning

All the 30 students who participated in the survey marked yes in this answer that they think using technology in learning is beneficial**.** They mentioned accessibility, flexibility, unlimited exposure, reducing teacher dependency, reliability, eligibility, sustainability, enthusiasm, freedom in learning etc.

Six students mentioned they can get access to learning anywhere, anytime, which is beneficial. Nine students said that learning by using technology is easier, and it saves time, energy, and paper. Nine students emphasized the benefits of technology in learning, citing its abundant resources, authentic materials, and unlimited exposure, which enhances knowledge, vocabulary, and cultural exposure. Two students highlighted that learning by using technology reduces teacher dependency. Three students found that technology-based learning enhances understanding of difficult topics, with YouTube videos playing a significant role in their comprehension of class lectures. One student said, "Technology opens new doors of adaptivity in our study as it makes us more reliable/eligible to be updated in the 21st century in education."

To sum up, students found technology-based English learning to be accessible, flexible, engaging, and effective.

4. The impact of learning anytime, anywhere in students' recent year learning experience

All the students agreed that ubiquitous learning positively impacted their learning in recent years except one. Three of them added some negative impacts, too, which they have experienced in their recent year of learning.

Most students reported improved language skills with technology. However, one student strongly disagreed, claiming technology negatively affects their creativity and reading habits, leading to last-minute Google searches for exam topics instead of extensive study.

Three students had mixed experiences. While technology helps them master language skills and boosts confidence, it also reduces their patience, disrupts their reading habits of physical books, and has adverse effects on their physical health. One student shared, "Technology boosted my confidence in presentations and language skills through interactions with foreigners enhanced my creativity. However, it negatively impacted my physical health, causing headaches and dark circles."

5. Barriers students face while using technology anywhere, anytime to learn the English language

The Common barriers they mentioned include network issues, lack of mobile data outside, insufficient device charges, Google advertisements, verbose video content, click-bait websites, and cultural differences in foreign videos. They also highlighted distractions and focus issues, with social media being a significant source of distraction during the study, often leading them off track. One student said, "Too many cooks spoil the broth. As a result of technology, we have many sources. So, without completing any course, we often switch to another. Often, distraction and mood-switching are the barriers for ubiquitous learners".

Other barriers mentioned are subscribing to numerous language learning channels but rarely checking the videos, procrastination stemming from the constant presence of technology, and the negative perspective of people around them who do not understand the value of technology for learning. Additionally, one student highlighted relationship issues, as their constant use of headphones led friends to believe they were being avoided.

6. Technical instruments employed for teaching English language in a UL setting

Both teachers teach English using technology, websites, and apps in a ubiquitous learning environment. T1 uses the instruments available to all pupils in a ubiquitous context. Some students bring laptops, and she sometimes requests them to share with the three of them. She allows them to use cell phones because not all students can bring laptops. She suggested Google Classroom for tools. In certain courses, she uses blogs and invites students to remark or provide feedback, which she then examines. She also uses gamification tools like Kahoot and video-mediated learning tools like generating a video that meets the criteria and uploading it.

T2 originally mentioned the university webpage and email as the most popular technical platforms, which allow access to Google Classroom, Google Drive, and Google Meet. He also mentioned Zoom for video and Google Cloud for storage. He later suggested ELSA Speak, BBC Janala, and TEDx server YouTube videos for his students. He also recommended IELTS Liz, British Council, Listenaminute.com, Write, and Shine of Cambridge University. He sometimes suggests that his students use paid apps if they can afford them, but the percentage is low and sometimes zero.

7. Teachers' consideration about students' equal access to UL

Both teachers said they do not think students have equal access to Ubiquitous Learning considering the Bangladeshi classroom context.

T1 emphasized managing access to ubiquitous learning by incorporating group and pair work activities. This allows students to share knowledge and resources, especially when accessing non-free software or having financial issues. She said, "I incorporated some group and pair work. So, one person may not know editing, but another person, if they have, can share and work together.

T2 explains that mixed students from different financial backgrounds, including middle, lower, and upper classes, struggle to access technological resources, affecting both themselves and teachers. While the university offers loans and phone purchases, proper needs analysis is needed for effective initiatives, as these steps are insufficient without proper needs analysis.

8. Incorporating UL into the existing curriculum to develop ESOL learning

Both teachers mentioned UL is already in the ESOL curriculum, including a sole course named Technology Enhanced Language Learning course. They focused on developing the ESOL curriculum for ubiquitous learning.
T1 discussed establishing blended learning, incorporating online engagement in specific courses through Google Classroom and student blogs. PowerPoint slides can be uploaded before or after classes, and teachers can use email addresses or Google Drives if uncomfortable with classroom use.

While T2 said, T2 said, "Well, as we don't have any software of our own, we borrow others' software like Zoom, GC, and Google Meet. Like foreign universities, we can use Pad let, create individual forums, and develop individual websites of ESOL; through this website, we will create a forum where students can submit their reflections, reports, and writing. It's like having an online forum, blog, or portfolio.

9. Teachers' perception of learners' dependence on technologies

None of the two teachers agreed that students are becoming dependent on technology. Instead, they said the opposite. However, their experiences are different**.**

T2 expressed a positive experience, highlighting that technology greatly benefits his students' learning. He emphasized that technology encompasses more than just social media and is crucial in enhancing their education.

T1, however, had a contrasting experience. She noted that not all students have equal access to ubiquitous learning (UL). She expressed concern that many of them primarily use technology for social purposes, showing little interest in using it for educational purposes despite her encouragement.

10. Teachers' perception about ensuring fair assessment online

Both teachers acknowledged the feasibility of fair assessment in the online learning environment. T2 pointed out that using roll numbers instead of names on scripts reduces bias, but technical glitches or submission issues can still pose challenges.

T1 believes that online assessment is more effective due to its time-saving nature and ability to provide detailed feedback to individual students. She uses Track changer and can incorporate comments and clarifications on online assignments, allowing for more detailed feedback. This approach is timesaving and allows for technical incorporation, allowing for a better understanding of written documents. In contrast, live classes or presentations often require relying on memory or immediate observations, which can lead to overlooking mistakes or misinterpretation.

11. Challenges they face integrating UL into teaching

Regarding challenges, they talked about device and expense issues, Internet speed, sound pollution, physical and mental illness, and students' lack of interest.

T1 noted that some students are reluctant to use Google accounts, citing reasons such as missing notifications, data limitations, and insufficient devices or internet access.

T2 expressed his challenges, mentioning that he does not receive support from the university and is bearing the expenses himself. He highlighted issues like slow internet speeds in Bangladesh and the need to conduct online classes in a closed environment due to sound pollution. This situation can lead to discomfort and mental pressure, making teaching online challenging.

12. The probable solutions they think to deal with these challenges

To address these challenges, T2 focused on integrating blended learning so that students and teachers become habituated and prepared to face any further problems.

T1 said that teachers do not have much to do regarding device insufficiency. So, she thinks that students can use computer labs or share devices with peers. The authority should develop an internet connection in the institute `and stakeholders to intervene together in this regard.

13. Teachers' suggestions to their colleagues who are interested in applying UL techniques in their teaching

They suggested 'formal training', awareness about students' requirements and the requirements of the courses.

T2 stressed the need to comprehend the significance of ubiquitous learning (UL) and its theoretical alignment with the curriculum. He recommended a structured approach: understanding, planning, demonstration, and implementation.

T1 emphasized the importance of strategic teaching methods and aligning strategies with learning outcomes. She stressed thoughtful incorporation into lesson plans, time allocation, and student engagement. Balancing interest with educational value is crucial, with the teacher's guidance being vital.

14. Concerns of guardians regarding UL

Four parents had a positive view of this learning approach, while one mother had mixed feelings but allowed device usage when necessary. The remaining two parents stressed the importance of enjoyable learning, the need to cope with technology's side effects, and their trust in their children's responsible use of technology for learning. One said, "In this tech-driven era, there is no looking back. My daughter uses technology for education, like online classes and watching tutorial videos. I support her, but it is concerning when kids misuse technology. Coping with technology for education is praiseworthy, and I fully support her." The other one of the 4 said that he does not worry about his son as he always keeps advising him about the proper use of technology for learning.

15. Belief about the growth of confidence and improvement of their children in learning

Three parents strongly agreed that their children are improving, while the other two also agreed, but one is not completely satisfied, wanting more improvement. Another parent wasn't entirely sure about the progress but believes there is a positive impact.

16. Guardians' perception regarding UL and their suggestion to other guardians

Five guardians boldly agreed that it's beneficial, especially when children use technology for language learning and skill development. They emphasized the importance of enjoyable learning through stories, pictures, and music to enhance vocabulary and interest. They suggest allowing children to use devices for learning and ensuring proper usage. One said, 'Yes, beneficial. I

will encourage other guardians to let their children use devices, but I must recommend that they be careful about their use to monitor how they are using devices.'

While embracing technology for educational purposes, guardians remain vigilant regarding its potential misuse. They unequivocally advocate for the advantages of technology-driven learning in the context of learning a language and skill improvement. despite worries, they promote the use of technology in a supervised and pleasurable manner to facilitate their children's educational progress.

Discussion: This study demonstrates how UL technology enhances language development and instruction, especially in improving English language skills. It's structured into four sections, covering ESOL students' perception, ESOL teachers' perspective, ESOL students' guardians' viewpoint, and the overall perspective of ESOL stakeholders on ubiquitous learning in language education.

Perception of the ESOL students about UL to language learning:

The findings from the questionnaire survey and the insights gained from the focus group discussion provide a convincing viewpoint on the importance of ubiquitous learning in language acquisition for ESOL students. The subsequent discussion elucidates significant findings derived from the analysis of the survey questionnaire.

The survey findings indicate a favorable solid opinion of ubiquitous learning among ESOL students, with all participants agreeing on its benefits for language acquisition. This consensus highlights the recognition of ubiquitous learning in the ESOL community. Most students (89%) acknowledged that ubiquitous learning greatly enhances the flexibility and accessibility of language learning resources, aligning with the idea of on-demand learning and the removal of temporal and spatial limitations in education. Most students (88%) supported technology use in language learning, emphasizing its benefits in providing resources and enhancing the learning experience. [2] highlighted ubiquitous learning's role in promoting language proficiency in their work. A substantial majority of students (80%) recognized technology's role in reducing reliance on teachers and supporting learner autonomy within ubiquitous learning. This finding aligns with research by [7], demonstrating how mobile technologies enable continuous learning experiences. Most students (84%) prefer online dictionaries for their convenience, and many (87%) engage in activities like listening to English songs, reading news articles, and watching movies to improve their language proficiency. 47% of students strongly agreed, and 34% agreed that they would rather submit projects using digital tools like Google Docs, Microsoft Word, email, or Google Drive than printed versions. This inclination demonstrates the smooth incorporation of technology into their scholarly processes. 84% of students appreciate using technology to access teachers anytime and anywhere for feedback, enhancing communication, and language learning support. This particular characteristic serves to enhance communication and facilitate assistance in the language learning process. Insights from ESOL student focus group discussions on ubiquitous learning outside the traditional classroom offer valuable perspectives on UL.

ESOL students largely agree that ubiquitous learning has significantly improved their language proficiency in listening, reading, speaking, and writing. This aligns with the idea that technology supports self-directed learning alongside traditional teaching. However, one student expressed concerns about excessive technology use hindering creativity and reading habits, emphasizing the need for a balanced approach that considers individual learning needs and habits. Students have diverse experiences with ubiquitous learning. They recognize its benefits, including increased confidence, improved creativity, and linguistic proficiency. However, they also acknowledge drawbacks like reduced patience, decreased reading of printed books, and negative impacts on physical well-being. These experiences highlight the complex nature of technology's role in language acquisition, offering both advantages and challenges for learners.

Perception of ESOL teachers about UL to language learning:

Both teachers adeptly use various technological tools, including laptops, mobile phones, Google Classroom, blogs, gamification apps like Kahoot, and video-mediated learning tools to enhance English language teaching in ubiquitous learning settings. This exemplifies an enthusiastic approach toward utilizing technology for educational objectives, ensuring a dynamic and captivating learning adventure for students.

Instructors acknowledge the challenge of ensuring equal access to UL in Bangladeshi classrooms. T1 promotes collaborative activities to address unequal access and enhance peer learning. T2 emphasizes the need for needs analysis and university initiatives to combat economic inequalities. These observations emphasize the significance of fairness in the realm of education and the responsibility of educators to create inclusiveness within university settings.

Educators discussed challenges in implementing Ubiquitous Learning (UL), such as device availability, internet speed, sound pollution, health effects, and student engagement. T2 recommended blended learning, while T1 suggested computer labs, device sharing, and improved internet connectivity, highlighting educators' adaptability in addressing UL challenges. The aforementioned solutions underscore the capacity of educators to demonstrate adaptability and inventiveness in surmounting challenges related to UL. Both instructors supported UL implementation, stressing formal training, understanding student needs, and strategic technology use in lesson planning. T1 highlighted technology integration aligned with learning outcomes and emphasized deliberate pedagogy in education. This highlights the significance of deliberate pedagogy and strategic technology implementation in education.

Perception of the guardians about UL to language learning:

Guardians observe their children increasingly using electronic devices for educational purposes, including online classes, assignments, research, and group study, which reflect a shift towards digital education due to COVID-19 challenges. The acceptance by parents of their children's enthusiasm to utilize technology for educational purposes highlights the younger generation's ability to adapt and embrace digital learning.

Parents hold diverse views on their children's extensive device use. Some are concerned about screen time, while others see technology as a valuable educational tool. Many have mixed feelings, acknowledging benefits while being cautious about downsides. These perspectives highlight the need for a balanced approach to technology, leveraging its advantages while addressing potential drawbacks.

Parents mostly believe their children's confidence and learning have improved with technology in language instruction. However, some have doubts or want further improvements. This highlights the need for ongoing evaluation and modification of educational techniques. Most parents believe that technology benefits their children's language learning when used appropriately, emphasizing interactive activities for vocabulary expansion and interest in learning. They advise other guardians to support technology-based learning with proper supervision and guidance.

Conclusion: Ubiquitous Learning gained global recognition, accentuated by the COVID-19 pandemic's reliance on technology for teaching and learning. While there's a growing emphasis on student-centered and self-regulated learning, the concept needs to be more familiar, particularly in Bangladesh. However, Younger students, especially at higher levels, are showing interest in ubiquitous learning. This research explores the views of the ESOL stakeholders of Dhaka University regarding ubiquitous learning, finding significant endorsement from students, teachers, and parents who recognize its advantages for English language learning. However, challenges such as restricted access to resources and concerns about excessive screen time were also highlighted. The study has certain limitations, including a small sample size and context-specific insights. For further research, it is recommended to engage larger participant groups along with conducting longitudinal studies. Addressing these aspects will provide a more comprehensive understanding of how ubiquitous learning can effectively enhance language acquisition in diverse educational settings.

References:

[1] E. Ejinwa, Ubiquitous learning: An innovative pedagogy that will transform education in Nigeria from access to quality. Multidisciplinary Journal of Academic Excellence. 8(1), (2018).

[2] J.S. Sung, U-learning model design based on ubiquitous environment. International Journal of Advanced Science and Technology. 13 (2009).

[3] A. Habib, A.S. Hoque, Towards mobile based e-learning in Bangladesh. In: 13th International Conference on Computer and Information Technology (ICCIT), Dhaka, Bangladesh, December, 2010.

[4] G.J. Hwang, K.C. Li, C.L. Lai, Trends and strategies for conducting effective STEM research and applications: A mobile and ubiquitous learning perspective, International Journal of Mobile Learning and Organisation. 14(2), (2020).

[5] N.M. Suki, Users' behavior towards ubiquitous m-learning. The Turkish Online Journal of Distance Education. 12(3), (2011).

[6] F. Behjat, M. Yamini, M. S. Bagheri, Blended learning: A ubiquitous learning environment for reading comprehension, International Journal of English Linguistics. 2(1), (2012).

[7] K. Mouri, H. Ogata, Ubiquitous learning analytics in the real-world language learning. Smart Learning Environments. 2(1), (2015).

[8] R. Khan, A. Jahan, S. Sultana, M.M.N. Kabir, M.Z. Haider, M.M. Roshid, Accessing online instruction amidst COVID-19 in Bangladesh: Barriers and coping strategies. Language Teaching Research Quarterly. 22 (2021).

[9] M.I. Mohammed, The perceptions of students and teachers about the benefits of and barriers to technology aided EFL. Journal of Literature, Languages and Linguistics. (2015).

[10] C.R. Kothari, Research Methodology. New Age International, 2004.

[11] J.W. Creswell, Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research, Fourth ed., Pearson, Boston, 2012.