

# The Impact of IT-assisted Reflection Activities on Tertiary Students' Foreign Language Learning and Communication Performance<sup>1</sup>

Hoa Phương Thi Dinh<sup>2</sup>, Hong-Thu Thi Nguyen<sup>3</sup>, Hanoi Law University, Hanoi, Viet Nam

## Abstract

The advancement of information technology has resulted in significant innovations in teaching methods and has positively impacted on the quality of education. In the context of learning a foreign language, active engagement in reflective activities is crucial for learners. Reflection enables both teachers and students to not only look back to on their experiences, but also make necessary adjustments. This research aims to explore the importance of incorporating information technology in English as a Foreign Language (EFL) classrooms for reflective purposes, with a specific focus on enhancing students' communication competence. The study adopts a mixed-methods approach, combining quantitative, qualitative, and experimental methods. It was conducted in six EFL classrooms, involving 187 students from a university in Vietnam, as well as six teachers who had prior experience teaching English. Questionnaires, open-ended questions, and interviews were administered to gather data. The findings demonstrated that utilizing information technology (IT) tools for reflective activities offers various benefits for student learning, according to the perspectives of the students themselves. Learners displayed increased motivation to learn and dedicated more time to engaging in communication activities both in and outside the classroom. Furthermore, the data indicated that students exhibited a greater willingness to tackle real-world problems and felt more confident in community-based activities. Consequently, comprehensive changes in syllabus adaptation, teaching and learning approaches, and student learning attitudes need to be implemented in order to achieve the desired academic goals.

## Resumen

El avance de las tecnologías de la información ha generado innovaciones significativas en los métodos de enseñanza y ha tenido un impacto positivo en la calidad de la educación. En el contexto del aprendizaje de una lengua extranjera, la participación en actividades reflexivas es crucial para los estudiantes. La reflexión permite tanto a profesores como a estudiantes no solo repasar sus experiencias, sino también realizar los ajustes necesarios. Esta investigación busca explorar la importancia de incorporar las tecnologías de la información en las aulas de inglés como lengua extranjera (EFL) con fines reflexivos, con especial atención a la mejora de la competencia comunicativa de los estudiantes. El estudio adopta un enfoque mixto, combinando métodos cuantitativos, cualitativos y experimentales. Se llevó a cabo en seis aulas de EFL, con la participación de 187 estudiantes de una universidad de Vietnam, así como de seis profesores con experiencia previa en la enseñanza del inglés. Se aplicaron cuestionarios, preguntas abiertas y entrevistas para recopilar datos. Los hallazgos demostraron que el uso de herramientas de las tecnologías de la información (TI) para actividades reflexivas ofrece diversos beneficios para el aprendizaje de los estudiantes, según sus propias perspectivas. Los estudiantes mostraron una mayor motivación por aprender y dedicaron más tiempo a participar en actividades de comunicación tanto dentro como fuera del aula. Además, los datos indicaron que los estudiantes mostraron una mayor disposición a abordar problemas del mundo real y se sintieron más seguros en las actividades comunitarias. Por consiguiente, es necesario implementar cambios integrales en la adaptación del programa de estudios, los enfoques de enseñanza y aprendizaje, y las actitudes de aprendizaje de los estudiantes para alcanzar los objetivos académicos deseados.

## Introduction

Information technology has permeated various aspects of society and become particularly crucial in science and education. The ways to access knowledge also go beyond the four walls of classroom thanks to the internet which by expanding the avenues through which knowledge can be accessed, has extended learning beyond the traditional classroom setting. This accessibility benefits both teachers and students, offering more opportunities to enhance knowledge and develop skills effectively with the aid of information technology (IT). According to Chapelle (2010), foreign language teaching and learning in the 21st century should prioritize computer-based learning activities that facilitate students in comprehending, assimilating, and practicing the language in the most efficient manner. A computer-assisted educational environment obviously brings many advantages in teaching and learning; however, educators also need to be aware of the difficulties that learners are facing, and need to find out the appropriate solutions to those issues. While computer-assisted educational environments bring numerous advantages to teaching and learning, educators must also acknowledge the challenges faced by learners and identify appropriate solutions to

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<sup>2</sup> [dinhthiphuonghoa.hlu@gmail.com](mailto:dinhthiphuonghoa.hlu@gmail.com), 0009-0007-5067-0255

<sup>3</sup> [nquyenthihongthu2607@gmail.com](mailto:nquyenthihongthu2607@gmail.com)

address them. One emerging challenge in online 5learning lies in collaborative assessment practices and reflective activities (Dos & Demir, 2013; Burhan-Horasanli & Ortaçtepe, 2016; Gratton & Jones, 2010).

There is a consensus that achieving academic goals in education requires more than just absorbing knowledge from textbooks. Academic activities aimed at revising knowledge and promoting the reflective experiences (Dos & Demir, 2013) are necessary for students to effectively apply their knowledge in communication. Reflection-based learning approaches bring theory and practice together, where learners engage in reflective activities based on the knowledge they have acquired. This enables them to engage in meaningful self-assessments of their academic work, make adaptive changes, and foster communication competence (Burhan-Horasanli & Ortaçtepe, 2016; Uzum et al., 2014). While the previous studies have shed light on reflective practices, there is a dearth of research on integrating technology-assisted reflective activities into the classroom and investigating their impact on tertiary students' communication performance. Therefore, there is a need for further research on reflective learning in smart educational environments to provide a comprehensive understanding of the importance, effects, and challenges associated with the implementation of technology-assisted reflective activities (TARA).

This paper proposes the use of technology-assisted reflective activities in English as a foreign language (EFL) classrooms, examines students' attitudes toward using IT-assisted reflection activities to support ge learning, and investigates whether technology-assisted reflective strategies can enhance student communication performance. It also addresses the challenges related to the reflective learning method by sharing experiences of TARA implementation at the university level and recommending appropriate solutions. This study also contributes the theoretical and practical implications, in which the author strengthened the theory of reflection and reflective learning by adding the theory of IT-assisted reflection activities. Besides, the contribution of practice is made to improve learning and teaching approaches through recommendations and suggested solutions. Generally, the gaps in the previous studies on tertiary students' communication performance were carried out in this study by integrating technology-assisted reflective activities into classroom.

This paper focuses on the following questions:

*What are students' perceptions towards using IT-assisted reflective activities in foreign language learning?*

*How do the IT-assisted reflective activities impact students' motivation for communication, their engagement time in communication activities, their willingness to solve real problems, and their confidence in participating in community activities?*

*What are the challenges do teachers and learners face, and their perspectives on the feasibility of implementing IT-assisted reflective activities?*

## **Literature Review**

### ***Learning and teaching in IT-assisted educational environment***

As the integration of IT into education advances within multimedia learning environments, innovative learning approaches have emerged as alternatives to traditional methods. The incorporation of IT in teaching and learning has been shown to yield certain effectiveness. In a study conducted by Tan and Pearce (2011), participants recognized the efficacy of blended teaching methods, which enhanced their language and communication skills through interactive the interactive web-based reading programs (Alison et al., 2014; Xu et al., 2012; Zitouni, 2021). Rosmansyah et al. (2022) describe a smart learning environment (SLE) as a hybrid learning system that utilizes intelligent tools and approaches to provide learners and other stakeholders with an engaging learning experience and to achieve desired learning outcomes. Consequently, smart education offers learners additional opportunities to access knowledge, skills, and practice through the assistance of IT tools. According to Spector (2014), a smart learning environment encompasses several dimensions, including: Knowledge: the ability to access relevant information and modify or add to it.; Task support: the capacity to carry out a task or provide a learner with the tools and information necessary to perform a task; Learner sensitivity: the capacity to maintain and use a learner profile in order to provide appropriate support; Context sensitivity: the capacity to recognize particular situations, including those in which a learner may be exposed to risks, and Reflection and Feedback: the ability to evaluate solutions or performances and deliver timely and relevant feedback to learners based on their development, profile, and ongoing learning activities.

In a different study, Uskov et al. (2017) proposed six levels of smartness for smart learning environment environments. These levels include Adaptation, which refers to the effective utilization of IT in specific learning environments; Sense, which highlights the ability to identify issues and find solutions; Inference, which involves drawing conclusions from data; Learning, which emphasizes the ability to reflect on and achieve learning outcomes; Anticipation, which relates to critical thinking and predicting future events; and Self-organization, which denotes the ability to organize oneself in the learning process. Technology-focused applications within smart learning environments can be categorized into six main groups (Nguyen & Nguyen, 2019; Uskov et al., 2017), including Group 1: Applications on software for smartphones and tablets, Group 2: Audiovisual/video streaming tools, Group 3: Computer learning software on computers, Group 4: Programs on computers, Group 5: Social networking applications such as *Twitter*, *WhatsApps*, Group 6: Websites used for document searching.

These IT-based tools have significantly facilitated education in general and learning in particular, offering various benefits in terms of learning approaches, reflection, and assessment (Al-Ahdal, 2019; Prensky, 2006).

### ***Communicative competence in foreign language classrooms***

Different perspectives and scopes have led to various conceptualizations of communicative competence. Chomsky (1965) defined communicative competence (CC) as the ability to communicate, focusing on knowledge of grammar rules and the ability to structure sentences correctly. On the other hand, Hymes (1972) noted that communicative competence encompasses not only grammatical knowledge, but also the appropriate adaptation of social rules to interpret messages and engage in a given context. Similarly, Canale and Swain (1980) proposed a model of communicative competence consisting of four components: linguistic competence (knowledge of grammar, syntax, and vocabulary), sociolinguistic competence (appropriate language use in specific settings), discourse competence (interpretation of context and structuring of speeches for effective communication), and strategic competence (use of the communication strategies to bridge gaps). Building on Canale and Swain's model, van Ek (1986) added two more components: social competence (addressing social issues, social customs, empathy, and motivation) and sociocultural competence (adapting to cultural norms, values, and social practices). Similarly, Husain et al. (2003) identified communicative competence as involving meaning negotiation, interpersonal relationship; application of symbolic systems, context understanding, and participants' cooperation. Furthermore, Fantini (2000) identified five constructs essential for developing intercultural communication: awareness, attitudes, skills, knowledge, and language proficiency. In this paper, the author proposes a model of communication performance based on communication motivation, engagement time in communication activities, willingness to solve real problems, and confidence to participate in community activities.

### ***The importance of reflection activities in foreign language learning and communication***

The practice of reflection has attracted significant interest among researchers and educators as a framework for critical thinking (Hatton & Smith, 1995). Han (1995) described reflection as a critical examination of past events, leading to considerations for corrective measures. Van Woerkom (2008) defined reflection as a mental activity that involves investigating one's own actions in a given situation. Through reflection, learners look back on their experiences, analyze their strengths and weaknesses, and develop adaptation plans for the future.

Schon (1987) emphasized the need for an overarching theory or value against which lived experiences can be compared for reflection to take place. He outlined four different activities of reflection: examining one's immediate skills and competencies in specific situations, descriptively analyzing performance, engaging in dialogue to explore different problem-solving approaches, and critically reflecting on the impact of one's actions on others, taking into consideration social, political, and cultural influences. Reflection allows teachers and learners to recognize discrepancies between theoretical concepts and their application in practice, enabling them to take action and address problems. Cochran-Smith and Lytle (1993) highlight the importance of becoming aware of the disparities between immediate interpretations of classroom situations and retrospective analyses. In essence, reflective learners gain self-awareness regarding their teaching styles and make positive changes in their practices. Reflective practice serves as a valuable tool for teachers to evaluate and improve their teaching methods.

Reflection has been implemented in classrooms through various tools, including journals (Moon, 2006; Uzum et al., 2014) and portfolios (Gratton & Jones, 2010; Mezirow, 1997; Orland-Barak, 2005). In the context of

smart educational environments, critical reflection has been enhanced through ICT-based tools such as blogs, social networks, apps, e-portfolios, and websites (Dos & Demir, 2013; Killeavy & Moloney, 2010; Williams & Jacobs, 2004; Yang, 2009). Dos & Demir (2013) suggested combining conventional reflection tools like reflective journaling, autobiographies, action research, observations, book groups, and teacher development groups with IT-assisted tools like blogs, *Google* sites, or social networks to strengthen student critical reflection. Integrating reflection in learning is imperative because they are defined as the facets of a cube that interweave together. In other words, the reflection is important to improve the outcomes, accomplish goals in academic activities and achieve the targets of long-life learning (Karm, 2010). In the same way, Wilson (2008) said that reflecting on past and present actions inherently recognizes the potential for enhancing future performance. The impact of critical reflection, especially when combined with IT, is most pronounced when collaborative learning and the collective construction of knowledge and meaning are incorporated. Mason and Rennie (2006) found that in online English language learning, the effect of reflection on academic outcomes is heightened when collaborative learning and collective knowledge construction are integrated. Burhan-Horasanli and Ortaçtepe (2016) also emphasized the collaborative nature of reflective practice. To enhance reflective abilities and academic outcomes, a wide range of common technological tools are utilized in learning and teaching, including e-portfolios, Internet Relay Chat (IRC), blogs, social networks, and electronic dialogue journals. To support students in sharing, assessing, and reconstructing learning experiences within online communities, Garrison (2017) recommends LMS discussion forums (e.g., *Blackboard*, *Moodle*, *D2L*) as environments that scaffold critical reflection and peer collaboration. The role of the community in facilitating reflection is crucial, as it allows reflection to extend beyond individual limitations and engage with a broader community of practice (Harford & MacRuairc, 2008; Jones & Ryan, 2014; Kabilan, 2007). Online discussions have been recognized as effective tools for promoting teachers' reflective practice (Ghaye, 2011; Killeavy & Moloney, 2010; Lee-Baldwin, 2005; Rushton & Suter, 2012; Yang, 2009). Blogs serve as valuable tools for documenting, revising, and discussing knowledge, as well as facilitating peer discussions (MacColl et al., 2005; Tan, 2006; Wang et al., 2005). Besides, Blogs are considered asynchronous discussion platforms (Ferdig & Trammell, 2004; Indrawati, 2021), resembling newsgroups and bulletin boards that foster interactive and active learning.

### ***Description of IT-assisted reflective activities implemented in EFL classrooms***

#### Creating Academic Websites with *Google Sites*

*Google Sites* can be utilized to create academic websites functioning as boards, e-portfolios, or virtual classrooms. These websites can showcase students' work and assignments, present research findings, provide course materials with links, share videos and classroom activities, and host quizzes or competitions. Students are required to build their own group's academic web on *Google Sites*, ensuring that it meets criteria such as useful and diverse content, attractive appearance, logical organization, accurate information, and interesting interactive activities. All assignments, achievements, and group activities are posted on the websites for members from other groups to learn from and evaluate the project's effectiveness.

#### Using *Skype* and *Zoom* for Interactive Learning Forums

Incorporating *Skype* and *Zoom* in the classroom creates an interactive learning environment that allows students to engage in unlimited interactions. Teachers can take students on virtual trips to various destinations worldwide, providing diverse experiences. Through these sites, students actively participate in discussions and talk shows with peers, teachers, and specialists from different nations.

#### Using social networks as online learning communities

Utilizing social networks as online learning communities, students can create social network accounts to directly or indirectly invite others to join their online learning community and engage in discussions. Each week, groups report on their activities and highlight their significance and influence on learning achievement to foster a sense of community.

#### Using blogs, *Facebook* or websites as e-journals

Students are encouraged to write journal entries using blogs, *Facebook*, or websites, enabling them to share their knowledge, news, presentations, and reflections with their peers. Each group creates an account and uses a blog or *Facebook* as a publishing system, organizing materials, schedules, text, images, audio, video clips, and other digital formats in reverse chronological order. Through blogs, students develop their critical

and analytical writing skills while reflecting on their learning process, identifying hot issues, exploring and filtering information and knowledge, and sharing insights.

#### Using blogs as e-portfolio

Blogs serve as personal reflective portfolios, allowing students to manage their knowledge, track their learning process, reflect on their achievements, and make timely adjustments.

#### Using webs as assessment and self-assessment tools

Websites are also useful as assessment and self-assessment tools. At the end of each week, students have the opportunity to visit pages created by other students or groups and provide assessments by leaving comments or scores on their performance. Simultaneously, each student engages in self-reflection and self-assessment by reviewing their own work. In EFL classes, IT-assisted reflective activities are undertaken using a range of online platforms and digital tools that facilitate active learning. To match the objectives of the lesson and the language proficiency of the students, teachers plan, modify, and incorporate these activities into particular classes. The main goals are to increase students' capacity for self-evaluation, encourage collaborative learning, encourage deeper involvement, and advance their English communication proficiency. Students are given significant chances to evaluate their learning, engage with peers and audiences around the world, and take charge of their education by utilizing technology including blogs, websites, social media, and video conferencing tools.

### **Methodology**

#### ***Research design***

A mixed-method approach including qualitative, quantitative, and quasi-experimental research, were used to conduct the study. The quantitative method uses formal measurements to obtain data in an orderly, impartial manner so that conclusions can be applied to different participants. Qualitative data tends to be more subjective. When the research subject recounts personal experiences or perceptions, qualitative research is typically selected, in which the informants who are providing the information examine the complexity, depth, and richness of a specific information. To investigate the relationship between an independent and dependent variable's impact and causes, a quasi-experimental design is used. Subjects are divided into groups based on predetermined criteria. The use of these methods aims to guarantee subjective opinions, objective data, and empirical experiment (Tashakkori & Teddlie, 2010)

#### ***Participants***

The survey was conducted in six EFL classrooms, involving 187 English major seniors from an English faculty at a university in Vietnam. These students were enrolled in a communication course during the fourth semester of their four-year academic program. The survey included a higher number of female participants, with 121 female students (64.7%) and 66 male students (35.3%). Additionally, the interviews were conducted with 20 students as the leaders of the groups in the classes who could gather more detailed information and comments from the members during the course, and six teachers who had five to ten years teaching experience in the subject. All participants received a study description and a consent letter, which they agreed to and they all voluntarily participated in the survey. The collection of demographic background information was also required and kept confidential. The ethical standards and criteria for human research were met through the approval of teachers and the university's requirements.

#### ***Data collection instruments and procedure***

Research respondents were requested to complete the questionnaires using a Likert scale ranging from 1 to 5 to provide scores and evaluate their experiences. A five-point Likert scale (1=very low, 2=low, 3=neutral, 4=high, and 5=very high) was used to design the questionnaires. The statements seventeen questions were developed and adapted from previous studies by Zainal (2007), Dos and Demir (2013), Yang (2009), and Jones and Ryan (2014). Data collection involved surveys, questionnaires, three open-ended questions, and interviews. The questionnaires were distributed to participants and consisted of items pertaining to the significance of using IT-assisted reflection activities in foreign language learning, the impact of IT-assisted reflective activities on student learning motivation, engagement time in communication activities, willingness to solve real problems, and confidence to engage in community activities. Additionally, the in-

depth interviews were conducted with 20 students and six teachers were interviewed to address the third research question.

The course was divided into two stages, each lasting seven weeks. In the first stage, students were taught communication in traditional communicative activities in the traditional classroom setting through interactions among students in pairs or in groups. In the second stage, the teacher integrated IT-assisted reflective activities into the curriculum. At the end of the course, students were given a survey that included questionnaires, in-depth questions, and interviews to express their evaluation and viewpoints regarding the implementation of IT-assisted reflection activities. Printed copies and links of the questionnaire were distributed to participants through face-to-face meetings or online platforms such as *Gmail*, *Google Forms*, and other media.

### **Data analysis**

The quantitative data were analyzed with the assistance of using IBM SPSS 25.0 software with the assistance of descriptive statistics. The demographic information of the participants was analyzed using frequency descriptive tests. Mean and standard deviation values of students' evaluations regarding the significance of using IT-assisted reflection activities in foreign language learning were calculated using statistical descriptive formulas. The correlation between using IT-assisted reflection activities and factors such as learning motivation engagement time in communication activities, willingness to solve real problems, and confidence to participate in community activities was examined using Paired-sample T-tests.

The qualitative data were analyzed using coding techniques. The author collected information from the interviewees with the question, "What is the learners' and teachers' evaluation of the challenges and feasibility of implementing IT-assisted reflective activities in learning?" The answers were recorded, transcribed, and coded using InVivo Code. In the decoding process, the author reflected on the participants' statements to interpret and summarize the core meaning of the excerpts. In the encoding process, the author focused on keywords in the passages, made compare-and-contrast statements, used synonyms, and so on, to choose appropriate codes. These codes were then labeled and categorized into common themes such as reflection, problem-solving skills, confidence to engage in community activities, learning habits, learning and teaching environment, curriculum compatibility, assessment tools, teaching methods, learning rules, learners' attitudes and autonomy, interactions between teachers and students, conflicts between knowledge and outcomes (Gibbs, 2010; Ryan & Bernard, 2010).

### Reliability analysis Cronbach's alpha

In the first stage of data the data analysis process, the author calculated the Cronbach's alpha value of the variables, resulting in an average of 0.83 (>0.7). This indicates that the variables have sufficient reliability to be used in the subsequent steps of data analysis (Hair et al., 2012, 2017a). These findings establish a good level of unidimensionality validity for the variables, ensuring appropriate data treatment for addressing the research questions.

### **Results**

After analyzing the results from the questionnaires and interview, the findings were synthesized into three main themes: (a) significance of using IT-assisted reflection activities in foreign language learning from students' perspectives; (b) the effect of IT-assisted reflective activities on student learning motivation, engagement time in communication activities, willingness to solve the real problems, and confidence to join in community activities; (c) teachers and learners' evaluation on the challenges and feasibility of implementing IT-assisted reflective activities in learning and teaching.

### ***Students' attitudes towards using IT-assisted reflection activities in foreign language learning***

To investigate the benefits of using IT in RP for learning speaking, a questionnaire with 11 items was sent to the students. The following Table 1 shows students' attitudes towards using IT-assisted reflection activities in foreign language learning.

Statements	n	Minimum	Maximum	Mean	Std. Deviation
Fostering communication skills	187	1	5	3.64	.879
Improving language proficiency	187	1	5	3.50	1.018
Facilitating group-working skills	187	1	5	3.38	.907
Empowering virtual experiment activities	187	1	5	3.49	.830
Prompting the critical reflection	187	1	5	3.67	.801
Boosting students' ICC	187	2	5	3.90	.948
Enhancing response-ability	187	1	5	3.01	1.099
Promoting students' critical thinking and problem-solving ability	187	1	5	3.48	1.019
Using technology media as a form of assessment	187	2	5	3.52	.750
Self-assessing their progress in learning and self-study through recordings, discussion and quizzes	187	2	5	3.37	.828
Offering unlimited interaction in the world through LMS such as <i>Skype, Zoom, Teams</i>	187	1	5	3.52	.986
Building online learning communities through <i>Blog, Facebook, Twitter...</i>	187	2	5	3.80	.915
Increasing students' interest in learning through academic games	187	2	5	3.78	1.007
Valid N (listwise)					

Table 1: Students' attitudes using IT-assisted reflection activities in learning language

The means were interpreted as follows: students strongly disagree with the statements in the point range of Strongly disagree 1.00-1.80, Disagree 1.81-2.60, Neutral 2.61-3.40, Agree 3.41-4.20, and Strongly agree 4.21-5.00 (Pimentel, 2010).

As observed in Table 1, students reached a consensus that IT-assisted reflection activities offer support in enhancing communication skills, fostering intercultural communication, building online learning communities, and promoting critical reflection, with the highest number of students expressing approval (M=3.64, 3.90, 3.80, 3.67, respectively). Participants also highly valued the increase in students' interest in learning through academic games (M=3.78). Although enhancing response-ability ranked last in terms of benefit levels, it still accounts for a value of M=3.01. In summary, the students indicated that IT-assisted reflection activities bring several benefits, and only a few participants expressed disagreement. Additionally, the Sd. Dev. value being greater than 0.7 indicates a high dispersion in the dataset.

The in-depth interviews were conducted to explore more details about students' viewpoints and evaluation toward the significance of IT-assisted reflection activities in learning the language. The students who listened and provided more detailed information and comments from the members in groups during the course aimed and clarified what they and their partners achieved from the activities. N.T (male) emphasized the importance of IT-based reflection "Nothing can help us to store our products for us to have a specific look at what we did more than the web pages. Nothing can extend our understanding about the world as much as an academic community network". H.L (female) acknowledged that they gained more than they expected in terms of knowledge, communication skills and reflection practice. Additionally, the participants manifested that IT-based learning opened a new horizon of knowledge and practice for them to approach. They have more chances to work with the partners from different schools, areas and nations through the community network community networks. With virtual experiment activities and breaking-border activities via talk shows or on webs and through social networks, they can broaden their awareness of different cultures. Consequently, they can make the appropriate changes in attitudes and strategies in intercultural communication. H.K.(male) has a similar view.

### ***The effect of IT-assisted reflective activities on student's communication performance***

A paired-sample t-test was used to examine and evaluate the difference between the effects of IT-assisted reflective activities before and after their implementation. Regarding student learning motivation, a hypothesis was proposed: there is no difference in student communication performance before and after the implementation of IT-assisted reflective activities.

	Paired Differences					t	Df	Sig. (2-tailed)
	Mean	Std. Dev.	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Students' communication motivation	-.535	1.388	.102	-.735	-.334	-5.267	186	.000
Willingness to solve the real problems	-.588	1.339	.098	-.781	-.395	-6.009	186	.000
Engagement time in communication activities	-.578	1.331	.097	-.770	-.385	-5.933	186	.000
Confidence to join in community activities	-.770	1.129	.083	-.933	-.607	-9.327	186	.000

Table 2: The effect of students' communication performance, before and after applying IT-assisted reflective activities

Table 2 illustrates that there were differences in student learning motivation levels before and after the implementation of IT-assisted reflective activities, as indicated by the Sig. (2-tailed) value being lower than the confidence level ( $p < .05$ ). The results indicate that students who received support through IT-assisted reflective activities had higher levels of learning motivation compared to students who were not involved in such activities.

During the interviews, students were asked about the impact of the activities on their learning motivation, and they reported that being exposed to these activities brought various benefits and had a significant influence on their motivation in learning and communication. Student A (22 years old) expressed, "Reflection is an essential phase in the learning process. If learning is like a river, we should swim in it multiple times. It helps us have more opportunities to self-reflect and evaluate our performance." Many students agreed that the teaching approach using IT-assisted reflective activities was beneficial and inspired them to engage in continuous learning:

*Reflection encourages us to overcome the fear of insufficient revision before acquiring new knowledge. It pushes us to become more competent in reaching our ultimate goals. Information technology makes the reflection process more convenient and effective, giving us more motivation to participate in learning. The world of high-tech is interesting and useful. We can create our own knowledge hub on websites and revisit it to review old knowledge or reflect on our achievements, recognizing what we have accomplished, what we haven't, and what needs to be changed. Our activities can be enjoyed not only by our group members but also by others. We can evaluate their work and self-assess our academic performance (L. B., female)*

In terms of willingness to solve real problems, the results in Table 2 show that the p-value of the variables is smaller than 0.05, indicating a significant disparity in the group's willingness to solve real problems between two periods, with a weak correlation score in the two-tailed test of significance ( $t=5.933$ ). Thanks to the significance of IT-assisted reflective activities, learners enhance their willingness to solve real problems, as evidenced by the difference in average scores between -0.781 and -0.395.

The qualitative data revealed a significant improvement in students' willingness to participate and explore appropriate solutions to problems:

*Before, we were so afraid of engaging in problem-solving tasks in the classroom, especially in real situations, because we couldn't respond promptly or were too embarrassed and nervous to think about language and ideas immediately. However, after participating in the IT-assisted reflective activities, we feel more confident because we have more opportunities to interact with foreign learners through platforms like Skype and social networks. The discussions and communication are meaningful and interesting. This helps us revise our old knowledge, evaluate our own performance, and make necessary changes. (H. N., male)*

Student L.A (female) added, "Problem-solving skills are crucial for learners. Now, through these activities, we are enhancing our skills. Nothing is a problem for us."

Regarding the student-engaged time of the group before and after the intervention, the paired-samples T-test data showed that students spent more time participating in online classrooms than before, with a difference between the mean values of -0.770 and -0.385. Therefore, the hypothesis stating no difference in student-engaged time in the classroom between the groups before and after the intervention was rejected, with a significant difference mean value of 5.78.

In terms of confidence to engage in community activities, the results indicated that the p-value (Sig.2-tailed) was less than 0.05, and the strongly correlated score was greater than 9.327, demonstrating a difference in confidence levels among students when participating in community activities.

Student perspectives on this topic vary, but they all emphasize the significant impact of IT-assisted reflective activities in making students more confident to participate in social and community activities. N.T. (male) explained that previously, there were many web pages dedicated to academic or voluntary activities in communities or institutions on social networks. However, students hesitated to join them due to a lack of knowledge and confidence. After engaging in IT-assisted reflective activities, we acquired the strategies and skills necessary to actively participate in these activities. H.K (female) said that practice makes perfect is true in this case.

### **Teachers' evaluation the challenges and feasibility of implementing IT-assisted reflective activities in learning and teaching**

Although significant efforts have been made in the implementation of IT-assisted reflective activities in learning and teaching, teachers and students still encountered certain difficulties. The most challenging barrier was the traditional learning habit:

*It appears that learners find it difficult to abandon their traditional learning habits, where they rely on reading textbooks to gather information. Many students lack the confidence to share their understanding publicly, express their thoughts, and engage with others, particularly partners from different countries through forums or social networks. They exhibit passivity in their performance and hold a negative attitude towards innovative approaches.* (H. H., female)

Furthermore, the online learning and teaching environment also poses challenges. "Unstable internet connections make our learning and teaching progress time-consuming. Technical issues and IT-related problems that arise during the teaching process can be exhausting. If the online learning environment is improved, our learning experience will be enhanced." (L. B., female)

In addition, the lack of compatibility between online learning design and the curriculum is another noticeable barrier. Adapting the traditional curriculum appropriately to fit the online learning approach is crucial. Clear instruction is essential for students to navigate through online or blended learning. As we transitioned to this new learning method, students were gradually moving away from relying solely on textbooks and exploring knowledge and information from various sources. This complexity sometimes posed challenges:

*We encountered difficulties in managing time and content when incorporating reflection activities into the learning process. Adjusting the timeframe, modifying lesson plans, and adopting appropriate teaching methods are necessary steps.* (K. L., male)

Furthermore, various factors such as assessment tools, teaching methods of instructors, learning rules, learners' attitudes and autonomy, interactions between teachers and students, conflicts between knowledge and outcomes, and conflicts between teaching and assessment methods presented challenges for both students and lecturers in implementing these activities.

*Learning autonomy plays a crucial role in the application of online learning. Teachers may be ready to start a project or activity, but students may lack willingness. This initial phase often poses difficulties in providing instructions and motivating students to actively participate in activities actively. The introduction of new teaching approaches with different learning rules and assessment methods can sometimes frustrate students.* (H. G., female)

Nevertheless, both teachers and students expressed their belief in the effectiveness of IT-assisted reflective activities. Students recognized the remarkable benefits of these activities in learning and anticipate their application in other subjects in the future.

*Despite the barriers, we cannot deny the significance of IT-assisted reflective activities in learning, particularly in enhancing students' communication competence. Practice leads to improvement, and reflection enables more effective practice.* (K. L., female)

A number of students exceeded their expectations and learned more than anticipated through the assistance of IT. They could record their learning activities, review knowledge, seek meaningful information for the subject, provide feedback to other groups, receive comments and assessments from readers, create their own diaries or portfolios, and exchange ideas through online learning communities. Many students praised IT-assisted reflective activities as a helpful learning experience. They highlighted its effectiveness, low cost, ease of use, and high level of interest. Based on these advantages and the progress made by learners, teachers believed that IT-assisted reflective activities were the right choice and should be further developed in the future.

All teachers unanimously supported the implementation of IT-assisted reflective activities in classrooms. While they faced certain difficulties during the initial stages of implementation, with increased practice

frequency and efforts from both learners and instructors, the implementation became proper and successful. The benefits of these activities outweigh the drawbacks, making it an appropriate and feasible choice for educational settings.

### **Discussion**

This study examines the use of IT-assisted reflective activities as an innovative approach to language teaching for English major students, aiming to enhance their foreign language learning and communication performance. The author emphasizes the significant benefits of these activities and their impact on student communication performance, including learning motivation, engagement time in communication activities, willingness to solve real problems, and confidence in participating in community activities. The data presented underscore the influence of these activities on learners' performance.

Employing IT-assisted reflective activities in foreign language learning revolves has several key benefits. These activities contribute to the development of communication skills, enhance intercultural communication competence, facilitate an interactive learning environment in the multilingual world, and foster the formation of online learning communities. These activities play a role in the advancement of communication skills, improve competency in intercultural communication, promote an interactive learning environment in a diverse linguistic context, and encourage the establishment of online learning communities. By using these activities, students have access to various tools that enable them to reflect on their learning, evaluate their progress, and make necessary improvements on web pages to enhance their academic products. The reflective phase of the learning process is deemed crucial, as learning without reflection is akin to eating without digestion. These activities encourage students to more easily and effectively achieve their learning objectives. Moreover, students are relieved of the burden of carrying physical diaries, portfolios, or bulky books, as everything can be managed on a webpage with ample storage capacity for important documents and learning resources. The pages can be organized to record knowledge and activities, and they offer editing capabilities for added adaptability. Regarding the collaborative aspect, the findings demonstrate that through the project activities, students can enhance their interaction and connection with classmates, teachers, and other students via social networks. This collaboration fosters fruitful discussions and assessments within groups, thereby motivating students to work more effectively toward achieving optimal results. Furthermore, participation in the project contributes to the development of various skills, including language competence, logical and critical thinking, IT competence, and learning autonomy. Practice truly makes perfect, and the project facilitates students' skill improvement. The findings align with previous research by Burhan-Horasanli & Ortaçtepe (2016); Karm (2010), Mason and Rennie (2006), and Wilson (2008), which highlight the role of reflection in learning and teaching on websites in facilitating personalization, communication, collaboration, and knowledge sharing. Additionally, the collaborative aspect and the opportunity to learn from one another promote socialization and effective communication.

Regarding the correlation between students' performance before and after implementing the activities, the data clearly demonstrate positive changes. The utilization of IT-assisted reflective activities led to an increase in students' learning motivation, engagement time in communication activities, willingness to solve real problems, and confidence in participating in community activities. Concerning the relationship between students' performance before and after the implementation of the activities, the data unequivocally illustrate favorable shifts. Students have become more enthusiastic and active participants in academic activities. These activities have facilitated learners' involvement in communication activities, particularly within a broader community of practice. This finding aligns with previous conclusions drawn by Ferdig and Trammell (2004), Harford and MacRuaric (2008), Jones and Ryan (2014), and Kabilan (2007). Undoubtedly, the experience of engaging in these activities provided students with opportunities to enhance interactive learning and communication performance. By participating in these activities, students felt more confident as they gained more opportunities to interact with foreign learners within academic communities or learning groups through social networks. They acquired strategies and skills necessary for engaging in public activities such as discussions, debates, or live talk shows.

When evaluating the challenges and feasibility of implementing IT-assisted reflective activities in teaching and learning, teachers and students highly valued the feasibility and potential of these activities. Most of them agreed that it was crucial to continue implementing IT-assisted reflective activities across various subjects in the future. However, they acknowledged the challenges that needed to be addressed and emphasized the importance of making appropriate changes to improve the online learning environment. Student learning autonomy and teachers' creativity and innovation are consistently identified as essential

factors for the successful implementation of these projects (Alison et al., 2014; Husain et al., 2003; Xu et al., 2012).

### **Suggestions**

The changes in teaching and learning approaches should be made to be compatible with the innovation in smart a smart educational environment. Stemming from the experience of online classrooms with the assistance of IT tools, it is recommended that clear instructions and strict rules, pertaining to the activities should be given to students at the beginning of the course. The teacher must clarify the purposes, how to work on the project, and how to assess the results of the students' products. This clarity could help students prevent misunderstandings in the learning process and assessment practice. Only when students are aware of what to achieve and how to accomplish their learning goals, do they feel confident enough to perform the learning tasks effectively. An appropriate assessment approach is of importance to meet the requirements of innovative learning project and to fit the curriculum. Thus, teachers should adapt the syllabus to integrate the project in to the course, such as shortening the theory in the classroom, increasing the online student time to study and implement the tasks at home, enhancing instructing and management. To successfully achieve the aims, synchronous solutions to learning, teaching, and assessment should be taken into consideration. With respect to learning, students' learning autonomy is placed in a prominent position. Students must realize that everything they are doing is for themselves, without student autonomy, every innovation and teachers' effort is worthless. Without autonomy, there could be no reflection, collaboration and skills development. The collaboration among team members is also required to ensure successful implementation. Teachers should also give students as much encouragement as possible. When students have high motivation, they will fulfill the requirements with more interest and passion and make more effort to achieve their goals.

### **Conclusion**

The study investigated the significance of IT-assisted reflective activities on communicative competence, including student learning motivation, engagement time in communication activities, willingness to solve real problems, and confidence to join community activities. The data acquired related to students' performance before and after applying the activities, illustrated that students made positive changes. With the support of IT-assisted reflective activities, there was an increase in students' learning motivation, engagement time in communicative activities, willingness to solve real problems, and confidence to join in community activities. Students were more eager and active to join in academic activities. Learning motivation empowered and facilitated their reflection ability, collaboration and skills development. More significantly, students were motivated with interesting creative activities and real projects in the online community. Concerning the evaluation of the challenges and feasibility of implementing these activities in learning and teaching, students asserted that implementation for all subjects in the future could be feasible and effective. According to the lecturers, it was not difficult for them to organize activities in the online classroom, they still, however had certain problems about how to guarantee the attendance of the whole class. Teachers should have both strict compulsory policies and suitable encouragement to build an effective learning environment. It cannot be denied that the IT of 4.0 revolution partly contributes to helping teachers reach a higher level in the perception of changing teaching methods. They might be able to promote interactions between cultures with the assistance of information technology transformations to break the physical walls and easily bring the world into the classroom. It is essential to use IT in teaching language in the 21<sup>st</sup> century so that, students will be involved in creative communicative activities and real projects in the online community. It is crucial to involve students in IT-assisted learning activities as frequently as possible. This provides them with a valuable opportunity to explore the world and discover their own strengths without the high expenses of traveling. Although they may not physically visit foreign countries and meet native speakers, they can still communicate with them through social networks. Teachers should integrate IT-assisted reflective activities into the learning process to foster active engagement among students. They will actively work, create their own academic products, take responsibility for reflecting on their achievements, and identify areas for improvement.

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